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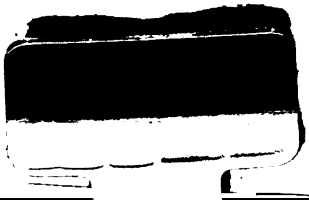
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JONATHAN PERIAM, CHICAGO, ILL.

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ANNUAL REPORT

OF THE

Wisconsin State Horticultural Society

For the Year 1901.

Annual Meeting at Oshkosh, January 15, 16 and 17.

Semi-Annual Meeting at Madison, August 27 and 28.

VOLUME XXXI.

J. L. HERBST, Secretary,

SPARTA, WIS.



MADISON, WIS.:

DEMOCRAT PRINTING COMPANY, STATE PRINTER.

1901.

JONATHAN PERIAM.

The subject of this sketch is familiar to the members of our State Horticultural Society, having attended many of our state meetings and taken an interest in discussions. Although not a resident of our state, he feels at home whenever he is with us and many times he has given us valuable hints in horticultural lines.

Old friends will be glad to have this brief word concerning this veteran agriculturist. The younger generation will be pleased to learn something of his life and service to agriculture. Jonathan Periam came to Cook county in 1838, at the age of 15, and when he was 18 undertook farming on his own account, including the raising of fine stock and gardening. In 1863 he sold his farm, and after the close of the war went to Champaign, where he was made head farmer and secretary of the board of trustees of the then new Illinois Industrial university (now the University of Illinois). Then came the day of beet sugar, and after serving the university for two years he resigned to take the management of the first beet-sugar factory in this country and the sugar-beet farm at Chatsworth, Ill. In 1871 he returned to Chicago and entered into agricultural journalism, editing successively the *Western Rural* and the *Farm, Field, and Stockman*. He served at this time for six years as member of the Illinois board of agriculture, and became interested in the *Prairie Farmer* in 1876, becoming, in 1888, its editor-in-chief and manager, continuing in this capacity until 1896, at which time he retired from active journalism.

Mr. Periam's literary efforts were not confined to journalism. He is the author of "*The Ground Swell*," a history of the farmers' movement, a work of 600 pages; the "*Live Stock Cyclopaedia*," 1,120 pages; the "*American Encyclopaedia of Agriculture*," 1,160 pages, and the "*Home and Farm Manual*," 1,200 pages. When the Chicago Veterinary college was instituted he accepted the chair of hygiene and sanitation and care and management of domestic animals. He gave up this work two years before retiring from business permanently, and now in dignified leisure he enjoys the very refinement of agricultural science and art—the cultivating of flowers which so delight him, and finds high pleasure in loading down his friends who call upon him with these eloquent testimonies to his skill and thoroughgoing knowledge of the profession which has been his, and which he has dignified and embellished during more than sixty years of active service.

LETTER OF TRANSMITTAL.

To the HON. ROBERT M. LAFOLLETTE,
Governor of Wisconsin.

DEAR SIR—I have the honor of presenting to you, as is required by law, the thirty-first annual report of the transactions of the State Horticultural Society, embracing the papers read and the discussions which followed at our yearly meetings, one of which was held in the city of Oshkosh in January, 1901, and the other in the city of Madison in August of the same year.

We have published the reports of the several local societies in the state which show the usual interest in horticulture. We also show the amount of money received from the state and the manner the same has been disbursed during the year.

One trial orchard at Wausau is in the best condition, and another one has been located and started at Eagle River.

All of which is respectfully submitted.

J. L. HERBST,
Secretary.

Sparta, Wis., September, 1901.

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ACT OF RE-ORGANIZATION

AND LAWS RELATING TO THE

WISCONSIN STATE HORTICULTURAL SOCIETY.

PURPOSES OF; APPROPRIATION.

Section 1459, Statutes of 1898, as amended by Chapter 320, Laws of 1901.

Section 1459. The Wisconsin State Horticultural Society is a body corporate by that name, with the general powers and privileges of a corporation so far as applicable. It shall be the duty of the society to aid in the formation and maintenance of county and local horticultural societies, to promote the horticultural interests of the state by holding meetings for discussion thereof, by the collection and dissemination of information in regard to the cultivation of fruits, flowers and trees adapted to the soil and climate of this state, and in other proper ways to advance the fruit and tree growing interests thereof; and for such purposes only it may take, hold and convey real and personal property, the former not exceeding five thousand dollars in value. For the purpose of aiding in the accomplishment of such objects the society shall be entitled to receive twenty-two hundred and fifty dollars annually from the state treasury, two hundred and fifty dollars of which shall be for the maintenance of experiment stations.

EXECUTIVE COMMITTEE; SECRETARY'S REPORT.

Section 1459a, Statutes of 1898.

Section 1459a. The executive committee of said society shall consist of the president, secretary and treasurer thereof, and one member from each congressional district in the state, these to be chosen annually by the county and local horticultural societies in the respective

districts at such time and in such manner as the state society may prescribe. The executive committee may fix the time and place for holding the annual meeting of the state society, if the last meeting thereof failed to do so, and may call such meeting by giving at least thirty days' notice to each member; said committee may also fill all vacancies in the offices of the society, and if a member of such committee is not elected from any congressional district the vacancy may be filled by a vote of two-thirds of the members of the society present at any regularly appointed meeting. The secretary of the society shall make, in October of each even-numbered year, a report to the governor of the transactions thereof, including an itemized account of all moneys expended since the last report was made.

ARBOR DAY.

Section 137b, Statutes of 1898.

Section 137b. The governor, by proclamation, may set apart one day each year to be designated as arbor and bird day, and may request its observance by all schools, colleges and other institutions by the planting of trees, the adornment of school and public grounds, and by suitable exercises having for their object the advancement of the study of arboriculture, the promotion of a spirit of protection to birds and trees, and the cultivation of an appreciative sentiment concerning them. He may also set apart, in said manner, one day in each year to be observed as labor day.

BY-LAWS.

I. The president shall preside at meetings, and, with the advice of the recording secretary, call all meetings of the society, and have general supervision of the affairs of the society, and shall deliver an annual address upon some subject connected with horticulture.

II. The vice-president shall act in the absence or disability of the president, and perform the duties of the chief officer.

III. The secretary shall attend to all the correspondence, shall record the proceedings of the society, preserve all papers belonging to the same, and superintend the publication of its reports. He shall also present a detailed report of the affairs of the society at its annual meeting. He shall also endeavor to secure reports from the various committees, and from local societies of the condition and progress of horticulture in the various districts of the state and report the same to the society. It shall be the duty of the secretary to make an annual report to the governor of the state of the transactions of the society, according to the provisions of the statutes for state reports.

IV. The treasurer shall keep an account of all moneys belonging to the society and disburse the same on the written order of the president countersigned by the secretary, and shall make an annual report of the receipts and disbursements, and furnish the secretary with a copy of the same on or before the first day of the annual meeting. The treasurer elect shall, before entering upon the discharge of the duties of his office, give good and sufficient bonds for the faithful performance of his duties subject to the approval of the executive committee.

V. The executive board may, subject to the approval of the society, manage all its affairs and fill vacancies in the board of officers; three of their number, as designated by the president, shall constitute a finance committee.

VI. It shall be the duty of the finance committee to settle with the treasurer and to examine and report upon all the bills or claims against the society which may have been presented and referred to them.

VII. The standing committees of this society shall be as follows: 1st, Committee on finance, consisting of three members; 2d, Committee on nomenclature and new fruits, consisting of three members; 3rd, Committee on observation, as now provided. Said committee to be appointed annually by the executive committee of the society.

MEMBERS OF THE SOCIETY.

LIFE.

AMES, W. L.	Oregon, Wis.
BARNES, A. D.	Waupaca, Wis.
CHAPPEL, F. H.	Oregon, Wis.
CHANDLER, S. S., JR.	Waupaca, Wis.
CONVERSE, D. C.	Ft. Atkinson, Wis.
CARPENTER, L. A.	Fond du Lac, Wis.
DOLTON, CHARLES A.	Dolton, Ill.
FOLEY, M. F.	Baraboo, Wis.
FRANCE, N. E.	Platteville, Wis.
FLOYD, HENRY	Eureka, Wis.
GOFF, E. S.	Madison, Wis.
HARDEN, F. A.	Weyauwega, Wis.
JOHNSON, FRANKLIN	Baraboo, Wis.
KELLOGG, GEO. J.	Lake Mills, Wis.
KELLOGG, M. S.	Janesville, Wis.
KREUTZER, A. L.	Wausau, Wis.
LOUDON, F. W.	Janesville, Wis.
LOOPE, T. E.	Eureka, Wis.
MARSHALL, S. H.	Madison, Wis.
RAYMER, GEORGE	Madison, Wis.
SENBERT, JOHN	Cologne, Minn.
SEYMOUR, A. N.	Mazomanie, Wis.
SIMONSON, ANDREW	Racine, Wis.
TILSON, MRS. IDA E.	West Salem, Wis.
UNDERWOOD, J. M.	Lake City, Minn.

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BRYANT, A., SR.	Princeton, Ill.
GREEN, E. C.	Urbana, Ill.
JACOBSON, MISS EMMA	Chicago, Ill.
KELLOGG, R. M.	Three Rivers, Mich.
PENDERGAST, W. W.	Hutchinson, Minn.
TAFT, L. R.	Lansing, Mich.
THURSTON, H. L.	Chicago, Ill.
VAN DEMAN, PROF.	Washington, D. C.

HONORARY LIFE MEMBERS.

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BAILEY, L. H.	Ithaca, N. Y.
CASE, F. W., ex-Secretary	Chicago, Ill.
DARTT, E. H. S.	Owatonna, Minn.
GIDEON, PETER M.	Excelsior, Minn.
HARRIS, J. S.	La Crescent, Minn.
HINCKLEY, M. E.	Marcus, Iowa.
PATTEN, C. G.	Charles City, Iowa.
PHOENIX, F. H.	Delavan, Wis.
STICKNEY, J. S., ex-President	Wauwatosa, Wis.
TRELEASE, PROF. WM., ex-Secretary	St. Louis, Mo.
TUTTLE, A. G., ex-President	Baraboo, Wis.
WILEY, O. S., ex-Secretary	Madison, Wis.

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BUCK, J. P.	Appleton, Wis.
BUCK, MRS. J. P.	Appleton, Wis.
BORING, L.	Ontario, Wis.
BUDD, FRANK	Ogdensburg, Wis.
BUDD, CHARLES	Ogdensburg, Wis.
BARTLETT, A. J.	Oshkosh, Wis.
BABCOCK, O. W.	Omro, Wis.
BARNES, ROY W.	Waupaca, Wis.
BALDWIN, M. R.	Waupaca, Wis.
BRADT, H. H. G.	Eureka, Wis.
CAREY, MRS. J. B.	Appleton, Wis.
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COOK, F. L.	Spearfish, S. D.
COOPER, J. H.	No. Greenville, Wis.
COE, R. J.	Ft. Atkinson, Wis.
DALE, H. B.	Oshkosh, Wis.
DURO, KARL	Bangor, Wis.
DRAKE, W. H.	Lake Mills, Wis.
EVANS, DAVID	Oshkosh, Wis.
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EDWARDS, F. C.	Ft. Atkinson, Wis.
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FINKLE, J. H.	Appleton, Wis.
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FLOYD, MRS. S. G.	Eureka, Wis.
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HOBART, H. A.	Oshkosh, Wis.
HETHERINGTON, R. A.	Oshkosh, Wis.
HATCH, A. L.	Sturgeon Bay, Wis.
HOXIE, B. S.	Evansville, Wis.
HATCH, C. A.	Richland Center, Wis.
HOWIE, JOHN	Wauunakee, Wis.
HIRSCHINGER, CHAS.	Baraboo, Wis.
HALKNEY, A.	Omro, Wis.
HANCHETT, WM.	Sparta, Wis.
HERBST, J. L.	Sparta, Wis.
HRIG, J. J.	Oshkosh, Wis.

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MENN, J. J.	Norwalk, Wis.
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PARSONS, MRS. A. A.	Eureka, Wis.
PELTON, GEO.	Reedsburg, Wis.
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PFAENDER, WM.	New Ulm, Minn.
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ROBLEE, MRS. W. M.	Appleton, Wis.
ROE, J. W.	Oshkosh, Wis.
REEK, JOSEPH	Neenah, Wis.
RILEY, A. S.	Pardeeville, Wis.
RODGERS, FRED	Oshkosh, Wis.
RIORDAN, D. E.	Eagle River, Wis.
REITBROCK, FRED	Milwaukee, Wis.
RANUM, O. K.	Dodgeville, Wis.
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SPENCER, MRS. F. S.	Appleton, Wis.

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 SMITH, B. H.Tiffany, Wis.
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 STARK, FRANKRandolph, Wis.
 STEAD, E.Omro, Wis.
 SCOVIL, GEO.Oshkosh, Wis.
 SNYDER, G. W.Oshkosh, Wis.
 SMITH, GEO. B.Green Bay, Wis.
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 TONG, GEO.Sturgeon Bay, Wis.
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 TEN EYCK, A. A.Brodhead, Wis.
 TIEMAN, MRS. SARAHEureka, Wis.
 TRELEVAN, JOSEPHOmro, Wis.
 TRELEVAN, MRS. JOSEPHOmro, Wis.
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 THOMPSON, E. E.Madison, Wis.

ULRICH, F.Dorchester, Wis.

WEYERHURST, D. E.Oshkosh, Wis.
 WILLIAMS, MRS. N.Eureka, Wis.
 WILLIAMS, DANIELSummit Centre, Wis.
 WILKINS, A. P.Delavan, Wis.
 WANNAMAKER, MRS. C. A.Platteville, Wis.

BUSINESS CARDS OF MEMBERS, 1901.

BARNES, A. D., Waupaca, Arctic nursery and fruit farm.

CHAPPELL, F. H., Oregon, grower and dealer in nursery stock.

COE & CONVERSE, Fort Atkinson, nursery stock and small fruits.

DARTT, E. H. S., Owatonna, Minn., State Tree Station.

EDWARDS, F. C., Fort Atkinson, small fruits and nursery stock.

EDWARDS, A. J., Fort Atkinson, nursery and small fruits.

FRANCE, N. E., Platteville, State Bee Inspector.

HARDIN, F. A., Weyauwega, small fruit grower and nursery.

HATCH, A. L., Sturgeon Bay, nursery and small fruits.

HOUSER, JOHN F., Onalaska, small fruits and vegetables.

IANCHETT, WILL., Sparta, small fruit grower.

HERBST, J. L., Sparta, small fruit and poultry.

KELLOGG, L. G., Ripon, small fruit a specialty.

KELLOGG, GEORGE J., & SONS, Janesville, Belle Cottage Fruit Farm.

KREUTZER, A. L., fruit and stock farm.

LOOPE, T. E., Eureka, orchard and small fruits.

RILEY, A. S., Pardeeville, nursery stock in general.

SEYMOUR, A. N., Mazomanie, small fruits.

SMITH, I. C., Green Bay, vegetables and small fruits.

SPRY, JOHN, Fort Atkinson, grower of small fruits and plants.

SMITH, G. B., Green Bay, gardener and seed potatoes.

TUTTLE, A. G., Baraboo, small fruits.

TOOLE, WILLIAM, Baraboo, pansy specialist.

UNDERWOOD, J. M., Lake City, Minn., Jewell nursery.

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OFFICERS FOR 1901.

President, T. E. LOOPEEureka.
Vice-President, F. C. EDWARDSFt. Atkinson
Secretary, J. L. HERBSTSparta
Treasurer, L. G. KELLOGGRipon
Corresponding Secretary, S. H. MARSHALLMadison

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Greenfield; GEO. J. JEFFREY, Milwaukee; H. CHRISTIANSON, Oshkosh; J. J.
MENN, Norwalk; C. A. ABBOTT, Appleton; A. L. KREUTZER, Wausau; D. E.
RIORDAN, Eagle River.

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A. J. EDWARDSFort Atkinson
A. A. PARSONSEureka

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CHARLES HIRSCHINGERBaraboo
PROF. E. S. GOFFMadison
A. L. KREUTZERWausau

COMMITTEE ON FINANCE.

IRVING C. SMITHGreen Bay
J. W. COOPERNorth Greenfield
L. F. LAITENOmro

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A. L. HATCHSturgeon Bay
J. L. HERBSTSparta

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COMMITTEE ON RESOLUTIONS.

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L. G. KELLOGGRipon

COMMITTEE ON TRIAL ORCHARDS.

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SUPERINTENDENTS OF TRIAL ORCHARD.

L. G. KELLOGGRipon
J. L. HERBSTSparta

FRUIT LIST.

A LIST OF FRUITS GROWN BY MEMBERS OF THE WISCONSIN STATE HORTICULTURAL SOCIETY,

As catalogued by the American Pomological Society. Those marked with the asterisk (*) are recommended for Wisconsin.

APPLES. (Pyrus.)

Section I.—CRABS.

[KEY.—Size, scale 1 to 10; 1, very small; 10, very large. Form: c, conical; l, irregular; o, oblate; ob, oblong; ov, ovate; r, round. Color: d, dark; g, green; r, red; ru, russett; s, striped; w, white; y, yellow. Flavor: a, acid; m, mild; s, sweet. Quality, scale 1 to 10; 1, very poor; 10, best. Season: e, early; m, medium; l, late; v, very. Use: c, cider; d, dessert; k, kitchen; m, market. Abbreviations of names of places of origin: Am, America; Eng., England; Eur., Europe; Fr., France; Ger., Germany; Holl., Holland; Ont., Ontario; Rus., Russia; Scot., Scotland.]

NAME.	DESCRIPTION.						
	Size.	Form.	Color.	Quality.	Season.	Use.	Origin.
Brier.....	7	r	r	5	e m	k m	Wis.
*Martha.....	5	o	yr	5-6	e	k m	Minn.
Minnesota.....	10	ob	yr	5	e	k m	Minn.
Transcendent.....	7-8	r	yr	5-6	e	k m	Am.
*Whitney.....	8	rc	r	8-9	e m	d k m	Ill.
*Hyslop.....	6	r	r	3	e m	k m	Am.
*Gibb.....	6	o	yr	9	e	k	Wis.
*Virginia.....	5	r ob	yr	5	l	k d	Wis.
Spitzenberg.....	5	ob	r	10	l	k d	Wis.

Section II.—APPLES.

*Avista.....	9	rc	yg	5-7	l	d k m	Wis.
*Arabka.....	9	ob c	yg	5-7	e	d k m	Rus.
Alexander.....	9-10	oc	yr s	5	m	k m	Rus.
*Anisim.....	4-5	rc	yr	7	m	d m	Rus.
*Antonovka.....	6	ov c	y	7	m	k m	Rus.
Arctic.....	7-8	rc	yr	8	l	k m	N. Y.
Babbitt.....	5-6	r	r	5-6	l	d k m	Mo.
Bailey.....	8-9	r	r	7-8	l	d m	N. Y.
Bea Davis.....	6-9	rov	yr s	4-5	l	m	Ky.
*Charlamoff.....	5-6	rc	gr s	6	e	d m	Rus.
Clayton.....	6-8	oc	yr s	6-7	v l	k m	Ind.
Early Harvest.....	5-6	ro	yw	9	v e	d k	Am.
Early Joe.....	3-4	oc	yr s	8-9	e	d	N. Y.
*Eureka.....	6-8	rob	gyr	6-7	l	d k m	Wis.
*Fall Orange.....	8-9	r	yr	3-4	m	k	Mass.
*Fall Queen.....	6-8	oc	gyr	7-8	l	k m	Va.
*Fall Spitzenburg.....	6-8	rc	gy	7-8	l	d k m	Va.
Fall Wine.....	5-6	ro	yr	8-9	m	d k	Am.
*Fameuse.....	5-6	ro	yr s	8-9	m	d m	Fr.

FRUIT LIST.

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Section II.—APPLES—Continued.

NAME.	DESCRIPTION.						
	Size.	Form.	Color.	Quality.	Season.	Use.	Origin.
*Golden Russett.....	4-6	ro	yru	5-6	vl	dm	Eng.
Gravenstein.....	8-9	oi	yr	8-9	em	dkm	Ger.
Grimes Golden.....	5-6	roc	y	9-10	l	d	Va.
*Hass.....	5-7	oc	gyr	4-6	em	km	Mo.
*Hibernal.....	5-7	obc	rs	3-5	m	km	Rus.
Jonathan.....	5-6	rc	yr	8-9	l	dkm	N. Y.
Keswick.....	6-7	oci	gyr	5-6	em	k	Eng.
Kinnard.....	5-6	oci	yr	5-6	l	dk	Tenn.
*Longfield.....	5-6	rc	y	4-5	e	k	Rus.
Louise.....	5-6	ro	we	5-6	l	d	Ont.
Lowe.....	8-9	ob	y	6-7	e	km	Am.
Lowell.....	8-9	ob	y	7-8	e	km	Am.
*Lubsk Queen.....	6-7	r	r	6-7	l	dm	Rus.
*McMahon.....	8-9	ro	yw	4-5	m	dm	Wis.
Maiden Blush.....	5-6	o	yr	5-6	e	km	N. J.
Malinda.....	6-7	rc	yr	5-6	vl	dkm	Vt.
Mann.....	6-7	ro	ygl	4-5	vl	mk	N. Y.
Melon.....	6-7	roc	yrs	7-8	l	dm	N. Y.
*Milwaukee.....	7-8	ro	yrs	5-6	l	km	Wis.
*Minkler.....	6-7	re	gyr	6-8	l	m	Pa.
*Newell.....	7-8	rob	yrs	5-6	l	km	Wis.
Northern Spy.....	8-9	roc	yrs	8-9	ml	dkm	N. Y.
*N. W. Greening.....	8-9	rc	gy	6	l	km	Wis.
*Okabena.....	5	rob	rs	4-6	me	km	Minn.
*Oldenburg.....	5-6	o	yrs	4-5	e	km	Rus.
*Pattens Greenings.....	8-9	r	y	5-6	ml	km	Iowa.
Peerless.....	5	or	s	5-6	l	m	Minn.
Perry Russett.....	5-6	rc	yru	5-6	ml	dk	N. Y.
*Peter.....	7-8	r	gy	6-7	m	km	Minn.
*Pewaukee.....	8-9	ro	yrs	4-5	l	km	Wis.
*Plumb Cider.....	5-6	rc	yrs	5-6	m	dm	Wis.
Pound Sweet.....	8-9	r	gw	5-6	ml	k	Conn.
Ramsdell.....	7-8	obc	r	6-7	m	km	Am.
*Raspberry.....	3-4	obi	r	6-7	me	km	Rus.
Red Astrachan.....	7-8	rc	rgy	5-6	e	km	Rus.
*Repka.....	3-4	rc	rs	5	lm	k	Rus.
Roman Stem.....	5-6	r	wyr	8-9	l	dk	N. J.
Salome.....	5-6	rob	yr	7-8	vl	dkm	Ill.
*Scotts Winter.....	5	rc	rs	5-7	l	km	Vt.
Sops of Wine.....	5-6	r	yr	5-6	e	d	Eur.
*Switzer.....	5-6	r	wr	6-7	e	k	Rus.
*Tetofski.....	7-8	oci	yrs	5-6	m	km	Rus.
*Talman Sweet.....	5-6	ro	y	6-7	l	km	R. I.
Twenty Ounce.....	9-10	r	yrs	6-7	ml	km	Conn.
*Utter.....	7-8	r	yr	6-7	m	dm	Am.
*Walbridge.....	5-6	oc	yrs	5-6	l	m	Ill.
*Wealthy.....	6-7	ro	yrs	6-7	m	dkm	Minn.
*Willow Twig.....	6-6	roc	yr	5-6	vl	m	Va.
*Windsor.....	5-6	r	yr	6	ml	m	Wis.
Winesap.....	5-6	rob	yr	7-8	vl	dkm	N. J.
*Wolf River.....	9-10	ro	wrs	5-6	m	km	Wis.
*Wis. Russett.....	5-7	rob	yr	5	l	km	Wis.
*Yellow Transparent.....	6-7	rc	wy	5-6	e	km	Rus.

PLUMS. (*Prunus*.)

[KEY.—Size, scale 1 to 10; 1, very small; 10, very large. Form: c, compressed; f, flattened; o, oval; ob, obovate; obl, oblong; r, round. Color: b, black; br, brown; g, green; p, purple; r, red; v, violet; w, white; y, yellow. Quality, scale 1 to 10; 1, very poor; 10, best. Season: e, early; m, medium; l, late; v, very. Use: d, dessert; k, kitchen; m, market; c, curing. Abbreviations of names of places of origin: Am., America; Belg., Belgium; Eng., England; Eur., Europe; Fr., France; Ger., Germany; Jap., Japan; Ont., Ontario; Rus., Russia.]

NAME.	Class.	DESCRIPTION.					
		Size.	Form.	Color.	Qual-ity.	Ad-hesion.	Sea-son.
*De Soto.....	Am...	6	ro	yr	g	.....	m
*Cheney.....	8	r	ry	g	c	me
*Wolf.....	6	ro	r	f	.....	m
*Rockford.....	6	ro	yr	g	.....	m
*Miner.....	6	lr	pr	g	c	l
*Hawkeye.....	6	r	r	f	.....	w l
*Wyant.....	4	ro	yr	f	.....	m
*Abundance.....	Jap...	4	ro	br	f	.....	e m
*Green Gage.....	4	r	gyr	b	f	m
*Lombard.....	6	rov d	rp	k	c	i
*Hudson River.....	8	o	rp	g	.....	m
*Purple Egg.....	6	rf	vy	f	.....	m
*Moore's Arctic.....	8	ro	b	m	.....	c
*Rollingstone.....	6	ro	r	i	.....	m
Gaylord.....	8	ro	ry	f	.....	l
*Barbark.....	Jap...	6	r	py	f	.....	m l
Stoddard.....	8	r	r	f	.....	me
Aitkin.....	8	o	r	f	.....	me
Wickson.....	Jap...	8	r w	br	g	.....	m
*Red June.....	6	ov	r	f	.....	ve
Milton.....	6	ro	r	f	.....	l
German Prune.....	8	o	p	f	.....	m
*Green Gage.....	6	ob	r	g	.....	m
Mariana.....	6	r	r	p	.....	l
Wild Goose.....	8	r	rp	i	.....	m l
Chas. Downing.....	6	ro	r	f	.....	w e
Weaver.....	6	oc	r	f	.....	m
Yellow Egg.....	8	o	y	p	.....	e l
Dennison.....	4	o	p	p	.....	l
Quackenbush.....	8	ob f	p	f	.....	m
Black Hawk.....	8	ro	r	g	.....	m l
Maldava yellow.....	8	o	y	g	.....	e
Quaker.....	8	ro	ry	g	.....	e
Ocheda.....	6	ro	ry	g	.....	m l

NOTE.—The plums that may be grown in Wisconsin are of four classes: American or improved natives, Japan and European. The first class (Am.) is hardy in all parts of Wisconsin, while the Japan and European are recommended for the lake region.

CHERRIES. (Cerasus.)

[KEY.—Size, scale 1 to 10; 1, very small; 10, very large. Form: c, compressed; h, heart shaped; o, oblate; r, round. Color: a, amber; b, black; p, purple; r, red; y, yellow. Quality, scale 1 to 10; 1, very poor; 10, best. Season: e, early; m, medium; l, late; v, very. Use: d, dessert; k, kitchen; m, market. Abbreviations of names of places of origin: Am., America; Eng., England; Eur., Europe; Fr., France; Ger., Germany; Ont., Ontario; Rus., Russia.]

NAME.	Class.	DESCRIPTION.					
		Size.	Form.	Color.	Quality.	Season.	Origin.
*Bessarabian.....	Morello	5-6	r	r	5	l	Rus.
Dyehouse.....	Morello.	5-6	ro	r	5-6	ve	Ky.
*Late Kentish.....	Morello.	5-6	r	r	4-5	l m	Am.
Lutovka.....	Morello.	7-8	r	r	4-5	e m	Rus.
May Duke.....	Morello.	6-7	rh	r	8-9	e	Fr.
*Montmorency.....	Morello.	7-8	r	r	7-8	e m	Fr.
*Morello.....	Morello.	6-7	rh	rb	5-6	l	Eng.
Ostheim.....	Morello.	6-7	e	rb	6-7	m	Rus.
*Richmond.....	Morello.	5-6	r	r	5-6	e	Eur.
Windsor.....	Sweet...	8	h	yr	7-8	l	Ont.
Wood.....	Sweet...	7-8	rh	yr	7-8	e m	Ohio.
Kings Amarella.....	Morello.	.....	.....	.....	.....	.....	.....

STRAWBERRIES. (*Fragaria*.)

[KEY.—Sex: s, staminate; p, pistillate. Size, scale 1 to 10; 1, very small; 10, very large. Form: c, conical; co, compressed; l, long; o, oblate; ob, oblong; ov, ovate; r, round; i, irregular. Color: c, crimson; d, dark; l, light; r, red; s, scarlet. Quality, scale 1 to 10; 1, very poor; 10, best. Season: e, early; m, medium; l, late. Use: d, dessert; m, market. Abbreviations of names of places of origin: Am., America; Austr., Australia; Can., Canada; Ont., Ontario.]

NAME.	DESCRIPTION.						
	Size.	Form.	Color.	Qual-ity.	Sex.	Sea-son.	Tex-ture.
*B. Wood.....	6	rob	pr	g	s	e	f
*Bubach.....	8	obrc	bc	vg	p	m	f
*Brandywine.....	8	oc	'c	g	s	i	m
Brunette.....	6	r	dr	g	s	m	m
Clyde.....	8	obrc	s	g	s	m	m
*Crescent.....	7	c	ds	g	p	m	f
*Enhance.....	7	rc	pr	g	s	ml	m
Glen May.....	7	co	br	g	s	m	m
*Grandy.....	7	rc	pr	g	s	l	f
*Haverland.....	7	ob	bc	vg	p	m	s
*Jessie.....	8	obc	bc	vg	s	m	s
Lovette.....	7	rc	pr	g	s	m	m
McKinley.....	7	obc	dr	g	s	m	f
Marshall.....	8	co	dr	g	s	ml	f
Michel E.....	6	rc	pr	vg	s	e	f
Margaret.....	7	c	dr	g	s	ml	f
*Parker Earle.....	7	c	pr	g	s	l	f
*Splendid.....	6	rob	pr	f	s	m	f
Wolverton.....	6	c	dr	f	s	m	f
*Warfield.....	6	c	dr	vg	p	m	f
*Wilson.....	7	rc	dc	g	s	m	m
Wm. Belt.....	8	co	hr	g	s	m	m
*Van Deman.....	6	rc	dc	g	s	ml	f
Yale.....	7	rc	dr	g	s	l	t
*Saunders.....	7	c	c	f	s	e	m
*Rio.....	6	c	dr	g	s	m	m
*Wolverton.....	7	c	dc	f	s	m	m
*Sparta.....	6	c	dr	g	s	m	f

GRAPES. (Vitus.)

[KEY.—Size, scale 1 to 10; 1, very small; 10, very large. Form: o, oval; r, round. Color: a, amber; b, black; g, green; r, red; w, white; y, yellow. Quality, scale 1 to 10; 1, very poor; 10, best. Season: e, early; m, medium; l, late; v, very. Use: d, dessert; m, market; w, wine. Abbreviations of names of places of origin: Am., America; Ont., Ontario.]

NAME.	DESCRIPTION.					
	Size.	Form.	Color.	Quality.	Season.	Origin.
*Agawam	8-9	ro	pb	6-7	m	Mass.
*Brighton	7-8	r	r	7-8	e	N. Y.
*Concord	7-8	r	b	5-6	m	Mass.
*Delaware	2-3	r	r	10	m	N. J.
*Diamond	6-7	r	gw	7-8	m	N. Y.
Janesville	5-6	r	b	3-4	e	Wis.
Lady	7-8	r	w	6-7	em	Ohio.
*Lindley	5-6	ro	r	5-6	m	Mass.
*Massasoit	7-8	r	r	5-6	m	Mass.
*Moore's Early	8-9	r	b	6-7	e	Mass.
*Niagara	8-9	r	w	7-8	ml	N. Y.
*Pocklington	8-9	r	wy	6-7	em	N. Y.
Salem	8-10	r	b	7-8	m	Mass.
*Vergennes	7-8	o	r	8-9	m	Vt.
*Wilder	9-10	r	b	7-8	m	Mass.
Woodruff	8-9	r	r	6-7	em	Mich.
*Worden	7-8	r	b	7-8	em	N. Y.
*Merrimac	8-9	r	b	7	m	Mass.

RASPBERRIES. (Rubus.)

[KEY.—Size, scale 1 to 10: 1, very small; 10, very large. Form: c, conical; o, obtuse; r, roundish. Color: b, black; c, crimson; p, purple; r, red; s, scarlet; y, yellow. Quality, scale 1 to 10: 1, very poor; 10, best. Season: e, early; m, medium; l, late. Use: d, dessert; k, kitchen; m, market. Abbreviations of names of places of origin: Eng., England; Eur., Europe; Fr., France; Ont., Ontario.]

NAME.	DESCRIPTION.					
	Size.	Form.	Color.	Quality.	Season.	Origin.
*Columbian.....	9-10	r	p	6-7	e	N. Y.
*Conrath.....	8-9	o v	b	8-9	e	Mich.
Cumberland.....	9-10	o v	b	9-10	e	Pa.
*Cuthbert.....	7-8	rc	r	6-7	m	N. Y.
Doolittle.....	5-6	r	b	5-6	e	N. Y.
Eureka.....	6-7	r	b	5-6	e m	Ohio.
*Gregg.....	7-8	ro	b	5-6	m	Ind.
Golden Queen.....	7-8	rc	y	6-7	m	N. J.
*Kansas.....	6-7	r	b	6-7	m	Kans.
*Loudon.....	6-7	rc	r	7	m	Wis.
*Marlboro.....	7-8	r	r	4-5	m	N. Y.
Miller.....	7-8	r	r	7-8	e	Del.
*Nemeha.....	7-8	ro	b	5-6	e	Nebr.
*Ohio.....	5-6	r	b	4-5	e	Ohio.
*Older.....	5-6	r	b	5-6	e m	Iowa.
*Palmer.....	6-7	r	b	5-6	e	Ohio.
*Shaffer.....	8-9	r	p	6-7	m	N. Y.
Souhegan.....	3-4	r	b	5-6	m	N. H.
Turner.....	4-5	rc	r	7-8	m	Ill.

BLACKBERRIES AND DEWBERRIES. (Rubus.)

[Key.—Size, scale 1 to 10: 1, very small; 10, very large. Form: c, conical; o, oblong; ov, oval; r, round. Color: b, black. Quality, scale 1 to 10: 1, very poor; 10, best. Season: e, early; m, medium; l, late; v, very. Use: d, dessert; k, kitchen; m, market. Abbreviations of names of places of origin: Am., America.]

NAME	DESCRIPTION.					
	Size.	Form.	Color.	Quality.	Season.	Origin.
*Briton.....	5-6	o ov	b	5	m	Wis.
Early Harvest.....	4-5	ro	b	7-8	e	Ill.
Eldorado.....	7-9	o	b	7-8	e	Ohio.
Minnewaska.....	9	o v	b	6	m	N. Y.
*Snyder.....	6-7	o	b	7-8	m l	Ind.
*Stone.....	5	ro	b	7-8	l	Wis.
Triumph.....	5-6	o ov	b	6	l	Am.
Badger.....	6-7	o ov	b	6	m	Wis.

DEWBERRIES.

Lucretia.....	9-10	o ov	b	3	e	W. Va.
Bartell.....	8-9	o ov	b	7	m	

CURRANTS. (*Ribes*.)

[KEY.—Size, scale 1 to 10: 1, very small; 10, very large. Form: r, round. Color: b, black; r, red; w, white. Quality, scale 1 to 10: 1, very poor; 10, best. Season: e, early; m, medium; l, late. Use: d, dessert; k, kitchen; m, market. Abbreviations of names of places of origin: Am., America; Eng., England; Eur., Europe; Fr., France; Ont., Ontario.]

NAME.	DESCRIPTION.					
	Size.	Form.	Color.	Quality.	Season.	Origin.
*Prince Albert.....	7-8	r	r	7-8	e	Eur.
Cherry.....	9-10	r	r	5-5	m	Eur.
Fay.....	9-10	r	r	5-6	m	N. Y.
*Holland.....	5-6	r	r	4-5	e m	Am.
Market.....	5-6	r	r	4-5	m	Eng.
North Star.....	5-6	r	r	5-6	l	Minn.
Red Cross.....	9-10	r	r	9-10	m	N. Y.
*Red Dutch.....	6-7	r	r	8-9	m	Eur.
Ruby Castle.....	6-7	r	r	6-8	m	
*Victoria.....	6-7	r	r	5-6	m	Eng.
*White Dutch.....	6-7	r	w	9-10	m	Eur.
*White Grape.....	7-8	r	w	8-9	m	Eur.
*Wildor.....	8-9	r	r	7-8	m	N. Y.
*Lee's Prolific.....	8-9	r	b	6-7	m	Am.
*Naples.....	6-7	r	b	6-7	m	Eur.

GOOSEBERRIES. (Ribes.)

[Key.—Size 1 to 10: 1, very small; 10, very large. Form: o, oval; r, round. Color: g, green; r, red; w, white; y, yellow. Quality, scale 1 to 10: 1, very poor; 10, best. Season: e, early; m, medium. Use: d, dessert; k, kitchen; m, market. Abbreviations of names of places of origin: Am., America; Eng., England; Ont., Ontario.]

NAME.	DESCRIPTION.					
	Size.	Form.	Color.	Quality.	Season.	Origin.
Chataqua	8-9	ro	g w	9-10	m	N. Y.
Champion	5-6	ro	g y	5	e	Am.
*Downing	5-6	r	g	5-6	m	N. Y.
Industry	9-10	ro	r	6-7	e	Eng.
*Houghton,	2-3	ro	g r	7-8	m	Mass.
Pearl	5-6	r	g	9-10	m	Ont.
*Red Jacket	5-6	ro	r	8	e	Ont.
Smith	5-6	o	y g	9	e	Vt.
*Triumph	8-9	ro	g w	7-8	e	Pa.
*Columbus	8-9	ro	g y	9-10	m	Am.
*Queen	8-9	ro	y g	7-8	m	Wis.

TREES AND SHRUBS RECOMMENDED.

EVERGREENS.

FOR SCREENS AND WINDBREAKS—Norway Spruce, Balsam Fir, White Pine.

FOR HEDGES AND SCREENS FOR SHEARING—Norway Spruce, American Arbor Vitae, Red Cedar.

FOR LAWNS AND CEMETERIES—Norway Spruce for backgrounds. For groups—American Arbor Vitae, Hovey's Golden, Arbor Vitae Pyramidalis, Arbor Vitae Siberian, Arbor Vitae, Juniper Excelsa, with Protection.

FOR SMALL LAWN DECORATION—Juniper Sueda, Arbor Vitae, Hovey's Golden Arbor Vitae, Arbor Vitae Pyramidalis.

DECIDUOUS TREES.

FOR CEMETERIES—Cut-leaved Birch, Wisconsin Weeping Willow, Weeping Poplar.

FOR LAWNS—All named above, and, in addition, Laurel-leaved Willow, Mountain Ash Oak-leaved, Mountain Ash American, Mountain Ash European, Maple Cut-leaved, Maple Norway, Kentucky Coffee Tree, Catalpa, Spiciosa, Elm American, Elm Scotch, Elm Weeping, European White Birch.

SHRUBS.

FOR CEMETERIES—Hydrangea, Paniculata, Cornus Philadelphus, Tree Lilac, Spiraea, Japonica, Spiraea Van Houttei, Wahoo (American Strawberry Tree), Exchordia Grandiflora.

FOR LAWNS—All named above and, in addition, Purple Barberry, Purple Fringe, Upright Honeysuckle, Wigelia Rosea.

FOR SCREENS AND HEDGES—Upright Honeysuckle, Barberry Red Fruiting.

ROSES.

TWELVE BEST VARIETIES HYBRID PERPETUAL—Paul Neyron, Mrs. J. H. Laing, Gen. Jacqueminot, Dinsmore, Marshall P. Wilder, Coquette des Blanches, Earl of Dufferin, Jules de Margottin, Vlek's Caprice, Magna Charta, Prince Camille de Rohan, General Washington.

MOSS ROSES, FOUR BEST VARIETIES—Perpetual White, Salet, Paul Fontine, Henry Martin.

CLIMBERS, FIVE BEST VARIETIES—Prairie Queen, Russel's Cottage, Seven Sisters, Gem of the Prairies, Victor Verdier.

HYBRID CHINA—Madam Plantier, Madam Hardy.

BRIER ROSES—Persian Harrison.

TRANSACTIONS

OF THE

Wisconsin State Horticultural Society.

ANNUAL WINTER MEETING.

OSHKOSH, Tuesday A. M., January 15, 1901.

The meeting was called to order by President Johnson, after which Rev. Mr. Lindsey of Oshkosh pronounced the invocation.

PRESIDENT'S GREETING.

It is a great pleasure, as well as an official duty, for me to again greet the members of the Wisconsin State Horticultural Society, and welcome these distinguished horticulturists from other states.

We are met under very auspicious circumstances to discuss questions of great importance—questions that affect health and happiness and home.

In these discussions it is inevitable that opinions should differ. It is desirable that the discussions be animated.

I hope and confidently expect that the Christian courtesy which has been such a pleasant feature of former meetings will be the rule of this.

The social feature of these gatherings is important. There are no other friendships like those that are formed in working together. Again, I bid each and every one welcome.

The following committees were appointed by the President:
Messrs. A. L. Hatch and S. H. Marshall, committee to welcome delegates from abroad.

Mr. L. G. Kellogg, committee to judge fruit.

The Treasurer then read the following report:

EXPENDED.

Order No.

1	Owen, S. M., delegate	\$20 00
2	Hatch, A. L., delegate	10 26
3	Laiten, L. F., expenses, ex. committee meeting.....	4 76
2	Hatch, A. L., expenses, delegate, winter meeting	10 26
3	Laiten, L. F., expenses, ex. committee meeting.....	4 76
4	Darrow, expenses, delegate committee meeting.....	4 76
5	Osborne, W. L., expenses, delegate committee meeting	6 35
8	Campbell, expenses and com. work, winter meeting...	5 95
9	Hoxie, B. S., expenses, winter meeting	95
10	Kellogg, M. S., expenses, delegate, winter meeting....	1 60
11	Loope, Dr. T. E., expenses, delegate, winter meeting ..	5 10
12	Herbst, J. L., expenses, paper, winter meeting.....	4 32
12	Edwards, F. C., expenses, paper, winter meeting.....	1 28
14	Finkle, Mrs. John, expenses, delegate, winter meeting.	4 78
15	Kellogg, L. G., expenses, paper, winter meeting	5 10
16	Kirschinger, Chas., expenses, paper, winter meeting..	4 48
17	Toole, Wm., expenses, paper, winter meeting	1 48
18	Barnes, A. D., expenses, paper, winter meeting	7 92
19	Abbott, C. A., expenses, delegate, winter meeting	4 78
20	Howie, John, expenses, winter meeting	53
22	Jewett, Z. K., expenses, delegate, winter meeting.....	4 32
23	Edwards, A. J., expenses, paper, winter meeting.....	1 28
24	Smith, Irving C., expenses, paper, winter meeting.....	5 90
25	Jacobson, Miss Emma, expenses, reporter, winter meet.	8 34
26	Plumb, Mrs. J. C., expenses, winter meeting	1 30
27	Loudon, Mrs. F. W., expenses, winter meeting	1 60
28	Kellogg, Geo. J., expenses, winter meeting	1 10
29	Ihrig, J. J., expenses, delegate, winter meeting.....	4 35
30	Johnson, Franklin, expenses, winter meeting	4 44
31	Huppeler, W. H., board of delegates	130 75
32	Coe, R. J., expenses, winter meeting	1 28
22	Hoxie, B. S., horticultural history.....	26 75
34	Herbst, J. L., 1st quarter secretary, salary	75 00
35	Jacobson, Miss Emma, report winter meeting	50 00
39	Johnson, Mary C. C., ed. Hort.....	50 00

WINTER MEETING.

3

40	Herbst, J. L., expenses, secretary's office	\$14 67
42	Baraboo Republic, printing magazine	83 50
44	Marshall, S. H., expenses, summer meeting	11 66
45	Smith, Irving C., expenses, paper, summer meeting....	6 42
46	Johnson, Franklin, expenses, summer meeting.....	10 82
47	Johnson, Mary C., expenses, summer meeting	10 82
48	Kellogg, Geo. J., expenses, summer meeting	11 44
49	Barnes, Mrs. A. D., expenses, paper, summer meeting..	4 02
50	Kellogg, L. G., expenses, paper, summer meeting.....	8 60
52	Hoxie, B. S., expenses, paper, summer meeting	12 50
52	Loope, Dr. T. E., expenses delegate, summer meeting..	7 90
54	Ihrig, Mrs. J. J., expenses, delegate, summer meeting..	6 00
55	Ramsdell, C. H., expenses, paper, summer meeting....	8 50
56	Hanchett, W. H., expenses, paper, summer meeting ..	6 30
57	Bingham, Dr. E., expenses, paper, summer meeting....	13 57
58	Herbst, J. L., expenses, secretary's office.....	41 96
59	Herbst, J. L., second quarter's salary	75 00
60	Jacobson, Miss Emma, expenses, summer meeting....	16 84
63	Kellogg, Geo. J., premium, summer meeting	12 00
64	Carpenter, A. H., premium, summer meeting.....	7 00
65	Barnes, Mrs. L. W., premium, summer meeting.....	9 00
66	Phillipson, C., premium, summer meeting.....	3 00
67	Christenson, H., premium, summer meeting.....	2 50
68	Smith, Irving C., premium, summer meeting	13 00
69	Sperbeck, M. V., premium, summer meeting.....	1 50
70	Ulrich, F., premium, summer meeting.....	3 50
71	Hanchett, W. H., premium, summer meeting.....	1 00
72	Secor, O. G., premium, summer meeting	2 00
73	Johnson, Franklin, premium, summer meeting.....	1 00
74	Rounds, Wm., premium, summer meeting.....	1 00
75	Hotel Bellis, board of delegates.....	36 05
76	Coe, R. J., expenses of office and summer meeting....	16 22
79	Jacobson, Miss Emma, report, summer meeting.....	22 50
82	Powers & Hood Bros., printing magazines.....	80 50
83	Johnson, Mary C., editing magazines.....	50 00
84	Smith, Irving C., delegate	4 39
85	Herbst, J. L., third quarter's salary	75 00
86	Loope, Dr. T. E., expenses, special meeting.....	7 50
88	Herbst, J. L., expenses, secretary's office.....	18 38
90	Powers & Hood Bros., printing magazines.....	79 50
91	Goff, Prof. E. S., expenses, delegate, Minn. meeting....	15 02
92	Herbst, J. L., expenses, delegate, N. E. Iowa meeting..	19 05
93	Phillips, A. J., expenses, delegate, Illinois meeting....	17 67
95	Hoxie, B. S., Hort. Hist.	2 95

WISCONSIN STATE HORTICULTURAL SOCIETY.

96	Herbst, J. L., fourth quarter's salary	\$75 00
97	Herbst, J. L., expenses, secretary's office.....	68 13
100	Edwards, A. J., expenses, delegate, Iowa.....	20 50
101	Hatch, A. L., expenses, delegate, Michigan.....	27 72
103	Coe, R. J. C., expenses, treasurer's office.....	18 47
104	Johnson, Franklin, expenses, traveling, etc.....	8 00
105	Johnson, Franklin, expenses, traveling, etc.....	25 00
106	Johnson, Mrs. Franklin, editing magazine.....	150 46
107	Baraboo Republic, printing magazine.....	58 00
		<hr/>
		\$1,763 80

TRIAL ORCHARD ACCOUNT.

Feb. 8.	Balance on hand	\$211 41
June 25.	Received of State Treasurer	250 00
		<hr/>
		\$461 41
		304 45
		<hr/>
		\$156 96

Order No.

36	Tarrant, Henry, expense, trial orchard comm.....	\$3 38
37	Franklin, Johnson, expenses, trial orchard comm.....	3 32
38	Kellogg, L. G., expenses, trial orchard comm.....	7 95
41	Herbst, J. L., expenses, trial orchard comm.....	9 34
43	Coe & Converse, trees for orchard.....	5 75
51	Kellogg, L. G., expenses, orchard comm.....	1 35
61	Kellogg, L. G., salary as superintendent.....	25 00
62	Herbst, J. L., salary as superintendent.....	25 00
77	Kreutzer, A. L., labor and rent.....	97 25
78	Kreutzer A. L., labor and rent.....	24 25
80	Currie Bros., seeds	3 25
81	Kreutzer, A. L., labor and seeds	28 60
89	Herbst, J. L., labels	7 00
87	Currie Bros., seeds	3 25
98	Kellogg, L. G., expenses, supt. trial orchard.....	25 00
99	Herbst, expenses, supt.	25 00
102	Loope, T. E., expenses, locating trial orchard	9 26
		<hr/>
		\$304 45

RECEIVED.

1900.

Feb. 8.	Balance on hand	\$119 56
Feb. 8.	Received from State Treasurer.....	750 00
Feb. 8.	Received for membership	39 00
Feb. 8.	Received for life membership	25 00
Feb. 8.	Received, badges	60
June 21.	Received, A. H. Porter, membership.....	1 00
June 21.	Received, Wm. Rounds, membership.....	1 00
June 21.	Received, J. L. Herbst, membership.....	20 00
June 21.	Received, A. H. Carpenter, membership.....	1 00
June 21.	Received, Irving C. Smith, rebate on R. R. fare..	1 00
June 22.	Received, State Treasurer.....	750 00
June 22.	Received, J. L. Herbst, membership.....	1 00
Dec. 1.	Received, Geo. C. Hill, membership.....	1 00
	Received, J. L. Herbst	13 00
	Received, subscription and ads. in magazine....	68 80
		<hr/>
		\$1,791 96
		1,763 80
		<hr/>
		\$28 16

The President—You have heard the treasurer's report; I do not know that it is necessary to take any action upon it; it is referred to the Finance Committee.

The Secretary then presented his report, as follows:

Members of the Wisconsin State Horticultural Society:

In presenting you my first annual report I will endeavor to bring before you what has been done the past year by our Society. In the first place I wish to thank the members for the trust you confided in placing me in the position you did. I feel highly honored in being the Secretary of this Society. While the work has taken a good deal of time I have always found a pleasure in doing it. I feel as if I had gained much horticultural knowledge the past year, more so than any year previous since the time I was ensnared in the horticultural web. My predecessor in his paper to the meeting at Wausau says: "Our Secretary, though trained in small fruits culture, is new at the business of orchard experiments and is employed at other business." I wish to reply to this in this way, that if my interest

continues in the tree fruits in the future as it has done in the past year I think I shall be a bigger crank on apples than my predecessor. I wish also to state that the experiments which Mr. Philips has started at Wausau have continued the same as he had intended they should. I think we shall see some valuable results from this orchard. Our society did a good deal of evangelistic work when we held our summer meeting at Wausau. The coming spring will see a great many apple and plum trees and small fruits planted in that section. Wisconsin produces as good a quality of apples as is grown any where. I have been told this by apple buyers who know their business.

The report of the inspector of nurseries shows that we are still free from the dreaded San Jose scale. "This scale or any other dangerously injurious insect or plant disease was not found on my inspecting tour," were the words used in the report of Inspector Thro.

After assuming the duties of secretary, I sent to each member of the Society a list of questions which I requested each to answer and return to me in an enclosed stamped envelope. Forty-nine of them returned the questions asked and I shall give you the result obtained. I was desirous of finding out how many local societies we had in the state, the number of varieties of apples, plums, cherries, blackberries, raspberries, strawberries, currants, gooseberries and grapes. I also requested them to give two subjects they wish discussed at the summer and winter meeting of the Society. I will give you the results obtained from the forty-nine who complied with the request. I find we have fourteen local societies, but there are more than this as some have failed to report. A new society was organized at Ogdenburg and one at Lake Mills the past season. Some members of the local societies have taken advantage of the reduced membership fee, which entitled them to a membership to the State Society for 50 cents, provided they were in good standing in their local society. We obtained since our summer meeting at Wausau four new members from Ogdenburg, nine from Oshkosh and seventeen from Appleton.

We have sent delegates to the state meetings of Minnesota, Iowa and Michigan, and the northeastern Iowa and northern

Illinois meetings. I have many inquiries for our last annual report and have sent to all who have asked. I have also been asked for back numbers of our report and have sent those volumes which we had on hand for distribution. Our library is still in the same condition that it was a year ago. The committee appointed to wait on the governor and urge upon him the necessity of having a room set aside for our Society report that at the time they saw him he gave them no encouragement. Possibly we could have better luck by applying to the new governor.

In placing the various subjects on our program, I have attempted to use the topics, at least most of them, suggested by members of the Society and gave them to those whom I thought were well versed on the various subjects.

Out of the 49 reports returned to me, I find 12 varieties of crabs grown by members of the Society. Whitney heads the list, being mentioned in 10 of the reports; Transcendent comes next, being named 6 times; Hyslop, 5; Brier, 4; Virginia, Martha and Sweet Russett, 3; Minnesota, 2, and Van Wyck, Arctic and Shield, each, 1.

In apples there are grown 149 varieties. Duchess heads the list, being mentioned 28 times; Wealthy, a close second, being mentioned 26 times; N. W. Greening, 18; McMahon and Yellow Transparent, each, 17; Talman Sweet and Fameuse, each, 16; Wolf River, Tetofsky and Longfield, each, 15; Rred Astrachan and Golden Russett, each, 11; Walbridge, Haas and Hibernial, each, 10; Pewaukee, 9; St. Lawrence, Windsor, Plumb Cider, Newell, Mann and Ben Davis, each, 6; Alexander, Patten's Greening, Roman Stem, Scott's Winter and Willow Twig, each, 5; Perry Russett, Red Wine and Dominion, each, 4; Sap of Wine, Switzer, Fall Spitzenburg, Peter Peerless, Okabena, Louise, Antonooka, Bailey Sweet and Charlemoff, each 3; 33 varieties are mentioned twice each, and 74 varieties are mentioned only once.

In plums I find 44 varieties. De Soto heads the list, being named 22 times; Hawkeye next mentioned 11 times; Rollingstone and Wyant, 9 each; Abundance, 8; Cheney, Wolf, Lombard, 7; Forest Garden and Rockford, 5; Arctic, 4; Robinson, Tatge, Green Gage, Miner, Downing, Burbank, 3 each; 7 vari-

eties are named twice each, and 20 varieties are mentioned but once.

In cherries I find 18 varieties, with E. Richmond heading the list, being named 21 times; Morrello next, being mentioned 12 times; Montmorency, 8 times; Kentish and Ostheim, 4; Dyehouse, 3; 5 are named two times each, and 7 varieties are named once each.

We have 25 varieties of grapes reported and Concord heads the list, being named 20 times; Worden a close second, with 18 times to its credit; Delaware, 15; Brighton, 11; Moore's Early, 10; Diamond, 8; Niagara, 5; Lindley, 4; Pocklington, Green Mountain and Campbell Early, 3 each; 2 are named twice each, and 12 are mentioned but once.

In currants 16 varieties are grown. Victoria and White Grape are each named 19 times; Red Dutch, 16; L. B. Holland, 13; Prince Albert, Cherry, North Star, White Dutch, each, 7; Lee's Prolific, Pomona, 4; Versailles, 3; Naples, 2, and 4 are named but once.

Eleven varieties of gooseberries are named, with Downing heading the list, being named 22 times; Houghton, 14; Red Jacket, 10; Smith Improved, 7; Industry, 5; Pearl, 3; Chautauqua, 2, and 4 varieties, once each.

We have 11 varieties of blackberries, Ancient Briton being named 17 times; Snyder, 5; Stone's Hardy, 4; Badger, 3; Eldorado and Triumph, 2, and 5 varieties are named once each.

Fourteen varieties of black raspberries are mentioned. Gregg is named 23 times; Older, 17; Kansas, 10; Ohio, 9; Nemeha-Palmer, 6 each; Hilbourn, 3, and 4 are mentioned twice each; 3 are named once each.

In red raspberries 12 varieties. Loudon heads this list, being named 27 times; Cuthbert, 19; Marlboro, 16; Columbian, 14; Turner, 8; Shaffer, 5; Brandywine, 4; Golden Queen, 3, and 4 varieties are mentioned once each.

Forty-nine different varieties of strawberries are mentioned. Warfield heads the list, being grown by 22 different ones; Bederwood, 19; Enhance, 13; Haverland, 12; Crescent, 11; Clyde and Splendid, 10; Brandywine, 9; Glen Mary, 8; Bubach, 7; Lovette, Parker Earle and Wilson, 6; Gandy, Jessie and Wm.

Belt, 5; Van Deman, 4; M. Early and Margaret, 3; 6 are named twice each, and 24 varieties are named but once.

The above figures are taken from answers to questions sent to each member of the society early last spring. I was in hopes each member would return the questions answered, but only 41 responded. The above list of varieties does not include any grown at the State Experiment Station.

I had intended to prepare a map of Wisconsin and designate the localities in which certain varieties of apples have succeeded, but the lack of time did not permit me to do it.

The above will give an idea of what varieties are being mostly grown. I would suggest that whoever your secretary may be another year that he prepare such a map, showing in which sections of the state certain varieties of apples have succeeded. A list of half a dozen varieties of apples can be sent to all members with a request that they say whether those varieties have been a success with them, and then a map can be easily prepared showing where the variety succeeds and where it is a failure.

Respectfully submitted,

J. L. Herbst,

Secretary.

The secretary then presented his report for the year ending January 14, 1901, as follows:

SECRETARY'S REPORT FOR YEAR ENDING JAN. 14, 1901.

Postage	\$35 91
Express and freight.....	16 50
Miscellaneous	51 81
Printing and stationery	46 13
Secretary, salary	300 00
	<hr/>
	\$ 450 38
	<hr/>
Received on expenses	\$150 38
Received on salary.....	300 00
	<hr/>
	\$450 38

The President—You have heard the secretary's report. Will you take any action on it? If there is no objection, the report will be adopted as read.

BEST FIVE APPLES FOR SOUTHERN WISCONSIN.

Henry Tarrant, Janesville, Wis.

Mr. Herbst, our secretary, wrote me asking if I would give a paper on the above topic for the winter meeting. I replied that I would endeavor to do so. But on thinking the matter over I find it quite difficult to name only five varieties of apples for this section of Wisconsin, about six miles from the state line south.

While we have so many varieties that are doing well and are profitable for the orchardist, we depend upon local markets for our sales, which are good and are likely to be good for some time to come, for the planting of apple trees has been neglected; the older orchards are dying out fast, with very few renewals.

But the design of this paper, I take it, is to be the starting out right of young men and those who have felt little interest in this subject, giving a reliable list of trees that will be hardy and profitable.

First I will name Duchess of Oldenburg, too well known to need any description. It will take care of itself, except a little thinning out of the top in the center. To have your tree long-lived do not let it overbear; thin out some of the fruit soon after blossoming and the tree will carry more fruit to perfection than if all is left to overtax it.

Second, McMahan, a Wisconsin seedling. This variety does not overbear with me, but is a good cropper and a most excellent apple for culinary purposes and is an October apple, large and handsome, sells on sight. The tree is a good orchard tree, good foliage, needs but little pruning and is satisfactory.

Third, Wealthy, a Minnesota seedling; a first class all-around apple, good cooking and good dessert; fruit will keep till January, if gathered before it is matured, but you must see that the tree does not bear too much or it will drop its fruit before it is

marketable. It is a very handsome red apple. I received the prize, two dollars, on a specimen of this variety at the Wisconsin State Fair last year—the “best fall apple”—and it was a beauty.

Fourth, Northwestern Greening, a Wisconsin seedling, a very handsome apple and of fair quality. While it has not been tested as to hardiness as long as some other kinds which I have fruited I am inclined to put this in my list as one of the five. I have some other varieties which I think more of, but for a new beginner I think this may give satisfaction with judicious pruning, keeping the top open and giving plenty of sunlight; if you do not the fruit will have this black fungus on it, spoiling the fruit for market. It does not keep so well as I should wish and in fact I have much better keepers, but on the whole I would recommend to plant Northwestern Greening.

Fifth, Flushing Spitzenberg. This is an old eastern variety, but is well adapted to southern Wisconsin, as the old trees bear witness to its hardiness, trees over fifty years planted; I know of two or three planted in 1846 and others of more recent date; a winter apple of good quality, red in color and a reasonably good keeper; does not overbear, but bears some every year. I consider this my best winter apple and can recommend it for planting in southern Wisconsin.

I cannot close this paper without stating my wish that the list asked for had been larger, say ten varieties.

As we here are dependent on local markets, which are the best kind for the orchardist, I can name five more varieties that will work well with the five named in this paper, and are good and profitable: Yellow Transparent, Peterson's Charlemoff, Patten's Greening, Wolf River, Dominion Winter.

I regret I have not named a good winter sweet. I do not know any better sweet than the Talman, which has been neglected, but there is a demand for this variety with us.

BEST FIVE APPLES FOR CENTRAL WISCONSIN.

Dr. T. E. Loope of Eureka.

Your secretary in putting me on for this topic has given me a greater task than at first appears. I leave for Tarrant the five best apples for southern Wisconsin and for Barnes the five for northern Wisconsin. It is enough for me to tackle central Wisconsin. My home is there and if I know anything about apples that knowledge is confined to that section. Barnes, in treating of northern Wisconsin cannot be supposed to criticise me, nor can Hatch living so far north. Tarrant, living south, is subject to the same rule, as is also Kellogg, Tuttle, Johnson and all others in that section. Philips might crowd into my territory and spring the list given in the December Horticulturist, but so few in our section are familiar with those varieties that I think I can get the verdict.

In selecting my five varieties I do so from the standpoint of "the greatest good to the greatest number,"—the man with a garden—the farmer—the mechanic—the laborer. I must have hardiness, productiveness, quality. Then I must cover as much of the year as possible, so that all classes can have the king of all fruits as a constituent of his food supply, as an appetizer, as dessert or adjunct.

My first, as I read, is in every one's mind—even the man with the "hobby apple" says "Duchess of Oldenburg." Hardy as an oak, prolific as none other, quality for cooking unexcelled, early, large, beautiful. Short of season, I grant, but it is delicious canned and dried. Did I hear a sneer about the dried apple? I have a most profound pity for the depraved, vicious and uncultivated taste of any one who does not, at some time of year, yearn for dried apple sauce. It is delicious. Why, the nectar upon which the gods subsist is flavored with dried apple juice!

Next I name Wealthy, that most delicious apple for late fall and early winter. It needs no encomium, it speaks for itself. It is hardy, productive and has the quality.

As I write, there stands before me on the table a large beautiful apple, green with a yellowish tinge. You know it before I

speaking—Northwestern Greening. If I left it out I suppose the Society would expel me. It is a hardy tree and the apple keeps well into spring. I don't much like it, but it must go in the list.

Then comes Fameuse, than which there is no better dessert apple. The salivary glands exude their secretion at thought of its exquisite flavor. Tree hardy, biennial bearer; subject to scab; season fall and early winter.

The fifth is a sticker to me. I have covered the season as far as may be. We have plenty of fall apples that could be put in the list, McMahon, Longfield, etc., but I want a better winter apple than N. W. Greening, it doesn't fill the whole bill. We have not grown Ben Davis, Baldwin and other standard winter fruit that the eastern states grow sufficiently to entitle them to a place. Perry Russett comes nearest to the mark but it is a late, shy bearer. Shall I put it in?

I believe in a few years I could name the apple that will fill the bill. Don't say "Hobby" to me for I have none of the trees to sell. I only wish I had. I hope to have some time. I wish to puff an unknown apple, the Parmetta, formerly Rushford. I believe it will be hardy and productive. The original tree has stood the last seven crucial winters, somewhat crippled but "still in the ring." It is a beautiful large apple with greenish color, changing to red late in the fall. Skin thick and inclined to be rough, spherical in form, mild subacid of extra quality. When seen on the tree in masses of even size and perfect form it will cause an attack of palpitation in any apple crank and he will feel like falling down to worship. It is curculio proof so far. In our own orchard where all other apples were distorted and worthless this apple was smooth and fair. Season, December to May. If further experiment justifies my estimate this will be the first on the list in time.

I think I know a good thing when I see it and can taste it. At the risk of some one yelling "Hobby" at my new apple, I must call your attention to the Fameuse Sweet, a seedling of the Fameuse, the tree standing the blasts of thirty winters in an exposed situation and in impoverished soil and June grass sod; medium to large, a dark red with snow white flesh, good quality,

sweet; taste for yourselves. If you don't like its looks or quality don't set any of the trees in your orchard, but if you don't you will be a poor man in February, March and April, when you can have delicious sweet apples to eat. This apple will be one of five in the near future.

THE BEST FIVE VARIETIES OF APPLES FOR WISCONSIN.

By A. D. Barnes.

I will name the best five varieties of apples for Wisconsin in their order of maturing and give the following reasons why they *are* the best:

First, I will name Duchess, because it is medium early, a splendid cooker, even when half grown, always salable, good sized, fine color, and no worms. The tree is hardy, an annual and regular bearer, if carefully thinned out soon after fruit is set; bears young, and is a long-lived tree, if kept pruned and fertilized.

I name Wealthy second, as it matures second in season, on my list of five varieties. This variety comes nearer to perfection, or "Apple Kingdom," than does any other apple to me known, on account of its hardiness of tree, wonderful productiveness, fine quality, splendid color, fair size and great value as a cold storage apple. This variety is hardy, bears very young, has very few enemies, scarcely any blight, and the fruit is always in great demand, selling at top prices, both for dessert and culinary purposes.

Northwestern Greening and Talman Sweet mature about the same season. Both are practically hardy trees, generally fruit at about seven or eight years of age from the root grafts, and in three or four years from top grafts. The former is one of the most hardy and profuse growing tree in Wisconsin, with practically *no blight*, a symmetrical, vigorous and a beautiful tree. The fruit is large to very large, rich greenish yellow when grow-

ing, and a fine golden yellow when fully ripe and mature, fairly good dessert, and one of the best pie apples grown, and in ordinary seasons will keep nicely to February and March, a very productive tree on the right kind of soils and sites. The latter is the all-around sweet apple, yet one cannot boast of the tree excepting of its longevity and power to produce fine fruit at an old age if kept carefully pruned, sprayed and fertilized. The fruit is luscious, rich and sweet, no better apple on earth for baking and sweet pickles, and few excel this as a dessert apple, and usually keeps till February and March.

Now comes Walbridge. The little hard hearted fellow that stays by us after all the rest are gone, and I sometimes think because it is so very poor, until we learn to appreciate its merits and value. But be this as it may, 'tis a hardy tree, annual bearer if carefully pruned and the fruit thinned out every year, one of the very best keepers, in fact it is not good until February or March, when it turns from *sour* to a crispy tart, juicy and sprightly, fairly good dessert apple, excellent cooker and one of the best known keepers in our Wisconsin orchards.

The President—This subject is now open for discussion. I suppose you will recognize that these three members do not cover the entire state. You cannot cover the state of Wisconsin by southern, central and northern. You cannot the state of Illinois. This covers the eastern portion of the state very well. Now, in this discussion we want to give every one a chance. Any person here is entitled to the floor once, and we would like to have you say what you have to say when you have the floor, so that others may have a chance to have their say.

Mr. Toole—In recommending these varieties as worthy of a place among the selected five, I notice the provision in regard to the thinning of the fruit. I myself have not looked upon the Duchess as, under ordinary circumstances, long lived, although perhaps this thinning of the fruit may entitle it to a place; yet if the question of hardiness is to be tested by longevity, then the Duchess has not proved a hardy variety, for with me it is not long lived.

Secretary Herbst—I do not think, from the reports that we have had, that there is anybody that wants to get up and say anything against the Duchess. Out of the 49 reports I have received, the Duchess is at the head of the list as being grown the most by any of the growers. All seem to be satisfied with it.

Mr. Coe—It also heads the list in these three papers. You will notice, Mr. President, that all three of them mention the three, the Duchess, Wealthy and Northwestern Greening, for summer, fall and winter apples. On the other two they are somewhat divided. Mr. Barnes, I notice, has Tallman Sweet and Walbridge; Dr. Loope has the Sweet Fameuse and that other delicious apple he talks about, and Mr. Barnes the Spitzenberg, and I do not remember the other. The three agree on the three leading varieties anyhow. I think that would be a pretty safe guide in Wisconsin to a planter who wants to plant a few trees.

Mr. Barnes—I did not understand Friend Toole's remark, but I thought I understood he took some exception to the Duchess as not being a long lived tree. I want to say to everybody present, that I do not think there is one tree that is more hardy than the Duchess. It will take up with the poorest soil on the farm and grow and bear fruit. If you will cultivate and fertilize the Duchess and give it a chance to grow, and pick off a part of the fruit as it sets, it is a long lived tree, and I will guarantee to day that there are about as many Duchess trees 40 years old as there are of any other variety.

Mr. Toole—I want to gain a little more practical information about this thinning out. Does any one here do it, or is it only theoretical?

Mr. Tarrant—I have practiced thinning a little. I found it a great deal of hard work, but then I believe that the orchardist can afford to do it on some of these varieties that overbear. The Wealthy and Duchess overbear, and some others, a number of other kinds of trees, but with these two that are spoken of I believe it will pay to thin them out if you are trying to raise good apples and long-lived trees.

Mr. Roe—What time of the season do you thin?

Mr. Tarrant—Soon after the blossoms are out, as soon as they begin to set. Of course a great many will drop off, but you can

tell by looking at them whether they are going to stay on or not, and if there are too many, take some of them off. It does not take long to do it; do not leave too many on a limb. Sometimes taking off three-fourths would be a good thing for some apple trees.

Mr. W. W. Pendergast—I want to ask one question to find out whether your experience here in Wisconsin with regard to the Wealthy and the Duchess has been similar to ours. For a great many years any one would say the Duchess is the most hardy apple we have, but lately the Wealthy has been getting its second wind, and now I think that as many would tell you that the Wealthy is hardier than the Duchess as will tell you that the Duchess is hardier than the Wealthy, and I want to know how it is here in Wisconsin.

Mr. G. J. Kellogg—I am not satisfied that there are not ten varieties on the list instead of five. I think that five will not accommodate any one that is planting. They have condensed their reports and agreed upon three. I think if we had had ten, they would have agreed upon about five, then we would have had the five. I am satisfied that this thinning process is best done in March, by thinning limbs that are going to bear. This is the easiest and quickest way, and after thinning, when they have set, letting no two apples touch each other. The great fault of the Northwestern Greening is, where they touch one another they invariably decay, or fall from some cause, either from the insect depredations or the contact.

None of the essayists have been able to get in the five the Wolf River, which is a pet in the market, and though it is condemned by some of our Society, I think that all should have it, and I think each writer should give us the additional five. The Malinda, I think, was not mentioned in the list. There is only one sweet apple in the whole list, excepting the Fameuse Sweet, which is a new variety that many of us have not got. With the list of apples on exhibition here, I think we could pick out ten that would satisfy Wisconsin, both southern and central, as well as northern. There are a number of varieties that should have been in all lists that are good in the north and do well in the south.

Mr. Barnes—Mr. President, I think it is due Mr. Pendergast that we answer his question as nearly as we can anyway. My experience—and I think I am growing as many Wealthy apple trees as any one in the state—is that the Wealthy is equal in any respect in hardiness with the Duchess; in productiveness it excels. More Wealthy apples will mature in a cluster than Duchess. Speaking of thinning Duchess apples, you often see three, four and five in a cluster. If you must thin your branches, as Friend Kellogg advises, in March, which is very proper, you will have five or six clusters in a bunch, and you must thin those as soon as they are set, and you will be surprised to see how fast the one or two remaining in the cluster will grow. It is not hard to thin the Duchess apple, you can thin them easier than any other variety that I know of, and I think you will get as good result in thinning the Duchess after the fruit is set as before. It takes no longer to go over those trees about the first of June and again in harvest time.

Mr. Rose—I would like to have a few varieties of apples that will not fall off. I have had probably fifty Duchess trees loaded with fruit and about ten bushels of Duchess apples from those trees, the rest went on the ground. I would like to have the best fall and winter and summer apple that will hang on the tree.

Mr. Morris—Of the apples on my trees at least one-third have blown off this year. I thought I had lost the crop because of a big storm which broke down a great many trees, but I am well satisfied that I got more than one-third more apples, and of a great deal better quality, and more valuable apples.

Mrs. Johnson—In coming up on the train yesterday I heard Mr. Chappell tell of a kind of apple that did not blow off in the great wind storm at the time of the State Fair. Mr. Chappell probably did not hear the remark that that gentleman made.

Mr. Chappell—The Dominion Winter stood the best in that heavy wind storm of any apple that I had. I had some others that held good, such as the Baptist, but when I came home that night, under some of the trees they picked up about half of the fruit that was on them, but there were only from four to half a dozen apples on the ground under the trees of the Dominion Winter.

Mr. B. S. Hoxie—There seems to be a conflict of opinion in regard to this matter of thinning. Mr. Kellogg says to do it in the limb, and Mr. Tarrant says as soon after the fruit is set and as soon as you see that Nature has not done her part of the pruning, then take out the fruit. Now, I think the consensus of opinion is, that the greatest strain upon a tree is when it is maturing its fruit, that is, the seed in all the fruits and grains, so that the one way to thin the fruit will be after it has arrived at that stage that you will know which is about to be the best developed, and then take off the poor ones, and I think that will be a safe rule to guide us in thinning apples on the tree, or any other fruit in fact.

Mr. Sturges—I would like to ask in regard to the apples that Mr. Chappell spoke of, that hang to the tree so well, whether they are adapted to this locality, and whether they are winter or fall apples.

Mr. Chappell—The Dominion Winter has kept with me till May, but this year I cannot tell how long it will keep. We all know that the season was a month longer and we had very much hot weather to mature the fruit. I have no apple, even Walbridge, or Northern Jeanette, as it has been called, that keeps this year any better, and yet I do not say that they keep as well as I would like. And I will say furthermore in regard to this thinning, that about as large as marbles would be my idea of when the apple is big enough. As Mr. Hoxie says, if we can see and distinguish just the ones to take off, and in that way can thin our apples and make our trees much better, the Longfield ought to be thinned about two-thirds at least out.

Mr. Blanchard—Somebody has said that what we want is an apple that will not blow off. Now there are a great many of us that have not the courage to thin them out unless it is a professional grower, and I think it is a blessing, maybe, in disguise, to let the wind blow them off.

Mr. Hatch—I understand I was appointed chairman of the committee to introduce delegates and new members.

We have with us today some delegates from outside, some eminent horticulturists. Among them we have Prof. Van Deman, one of the most cosmopolitan and best all-around horticulturists

in the United States. He was with us before, and I think stands as an honorary life member upon our books, at any rate, if he is not, I move that he be made an honorary member, and in honoring him we shall certainly honor ourselves.

We have with us another eminent horticulturist from a state whose horticulture is second to none, Prof. L. R. Taft, botanist and horticulturist of the Michigan Agricultural college.

We have with us also Mr. A. Bryant, Sr., of the Illinois Horticultural Society. We have also the president of our sister state, Minnesota, Mr. W. W. Pendergast.

I move you that these gentlemen shall be made honorary members of our Society now, and that they shall be invited to participate in our discussion without further introduction, except such recognition as will be given them from the chair.

Seconded by Dr. Loope and carried.

Mr. Toole—If the apple question is not yet exhausted, I would like to get some information in regard to that variety which is exhibited over there. It is to me a new variety, and I wish to know why they give it so prominent a place there. We should get the benefit of the experience of others, so that we may know whether the rest of us will try it or not.

Dr. Loope—Does Mr. Toole refer now to the Parmetta?

The President—I understand that he does.

Dr. Loope—This Parmetta tree is found, and the only tree I know of, in an orchard near Eureka. The tree has been growing there for at least twenty years. It is on the place of a man named Jewell, who is now dead, and the tree of course has been somewhat hurt, but I think it was hurt more by the manipulation of the man who owned it than by anything else, because they thought several years ago that it was not going to be hardy and it was going to die, and I never saw such a sight in my life and never expect to. The fruit grows even in size and it grows in ranks. Now I have submitted it to Prof. Van Deman, and he is inclined to think that it is the Hubbardston, but he is not quite sure. I have also asked Prof. Taft about it, and he thinks he ought to know the Hubbardston, and he is not quite decided about it. Now, it may be that, but the question then comes to me, Why is not that apple better known, if it is the Hubbard-

ston, as an apple for the masses, why is it not better known in the market. It seems to be prolific, of good quality and fine appearance. We call it the Parmetta, because the lady of the place requested us to call it that.

Mr. Hoxie—Is that supposed to be the seedling?

Dr. Loope—Well, they do not know. In regard to the location of that apple, it is in a low, hard, clayey location, and it is very little above the water line, and the other trees, the Pewaukee and Wolf River and other trees, and the Northwestern Greenings, do not do well there. That is, they have borne well, but they are subject to the same difficulty that this has, they are crippled.

Mr. M. F. Foley—Have you any young trees of this variety, and how did they come through the winter of 1899 and 1900?

Dr. Loope—We have a young tree and it is all right. It is girdled by the rabbits, and the girdled tree is producing fruit.

Mr. Toole—Is there any root killing? We have in our orchard a tree that we are fruiting, and that is given the most unfavorable location. It was in an old nursery that we had not taken up, and the fruit there was entirely worthless; it was worm eaten and curculio obtained, and it was all twisted and distorted.

Mr. Foley—Did you ever graft any of those varieties?

Dr. Loope—Yes, we did; we grafted a lot in '95, some 36,000, and they all died in the winter; they were killed that bad winter we had—1895 to 1896 I think it was.

Prof. Van Deman—Mr. President, I do not say positively that this is the Hubbardston, but when I first looked at the specimen I at once thought of the Hubbardston. When I cut the apple and tasted it I thought still more so, and I am of the present opinion that Hubbardston is its correct name, commonly known as the Hubbardston Nonesuch, the Nonesuch having been cut off by the Pomological Society.

Now, I do not make the positive declaration that this is the tree, but it is my present opinion. Now, I wish to call for some information just at this point, because it is quite likely that a great many of the members here have planted Hubbardston; it seems to me indeed marvelous if many of you have not planted

it for years gone by, because it certainly must have drifted westward with the other varieties, such as Baldwin and all those that have been grown for the last 100 or more years in the east, and it seems to me very strange that Hubbardston has not been thoroughly tested within the limits of Wisconsin, and if that is true, that the Hubbardston has been tested and found wanting, we would be almost justified in saying that this is not Hubbardston, but in the absence of any information as to the unreliability of Hubbardston in other places where I suppose it may and must have been planted, then I should rather conclude that this is the correct name. This adding of synonyms, such as this Parmetta, is exceedingly unfortunate, because it merely confuses the nomenclature of the fruits of the country, and is apt to lead to confusion, and often a great deal of damage. I should like to have those who have tried Hubbardston, if there are any here who know they have positively tried it, to state so now.

Mr. Pendergast—I tried it in New Hampshire and I called it the best apple that I ever saw, and when it was suggested to me that this might be a Hubbardston I looked at it, hunting for the little moth patches that were scattered around over the skin of the Hubbardston. There would be three or four, perhaps half a dozen little moth patches, not as large as the end of a pencil, and all the Hubbardston that I knew—Hubbardston Nonesuch we called them then—I do not know that I ever saw one without those little patches. And besides, towards spring, instead of growing mealy—it was an apple that never got mealy—it would shrivel a little, but it would crackle like a crisp cucumber when you cut it, crackle before your knife blade. I do not believe it has been tried here in the west, and I do not believe a barrel of Nonesuch has ever been brought to the west for sale. I have tried every year for at least forty years and I never could find a barrel of Hubbardston Nonesuch, and I could not hear anything about the apple, and I do not hear of it in the east. I do not know what has become of it; it seems to me it has dropped down out of sight.

Prof. Van Deman—If you will pardon my rising to the floor again, I will say, the Hubbardston is coming up in the east very much. The apple growers of western New York and Connecti-

cut and various other great apple growing sections are now planting and they are top-grafting many of their Baldwin trees with Hubbardston and other varieties, Davis among the rest, and why it has not been more popular perhaps we cannot exactly say, but it certainly is an apple of almost unequaled flavor, it is about as good as any of our best, and these apples are just so.

Mr. Pendergast—Do you not remember the little moth patches?

Prof. Van Deman—Yes, they have a pale russett and a kind of smoky appearance, and in the west, let me say that the apples are clearer in their appearance than they are in the east, decidedly so, and the further you go west the more it is so. Take for instance the Roxbury Russett; I have seen it grown in Colorado without a particle of russett on it. The Hubbardston is a kind of mixed russett and red, a kind of dull color in the east, but here it is a great deal less so, and I know it is so in Illinois and in Kansas and Missouri and various other places where I have seen it that it is very much like that.

Mr. Jones—It puts on western airs.

Prof. Van Deman—Yes, the western air takes off a great deal of that smoky appearance.

Mr. Brock—I would like to ask Dr. Loope about how old he thinks this tree is, this Parmetta?

Dr. Loope—I think about twenty years old.

Mr. Brock—How old are the other trees in this orchard in which this tree is?

Dr. Loope—I should think that some of them are considerably older than that.

Mr. Brock—I knew the brother of this Mr. Buell that the Doctor speaks of that set out these trees in his orchard originally, and he had obtained many of them from Mr. Henry Floyd, a nurseryman in our section. I saw Mr. Floyd in regard to this and he had an idea that he had sold the tree to Mr. Buell. Mr. Buell gave it two or three different names, one was Roman Pippin, and that was undecided when he died. I expect Mr. Floyd here this afternoon, and I believe he can tell us if he ever sold Mr. Floyd any of the Hubbardston. Then the matter can probably be settled. But evidently it is in the regular nursery row.

Mr. Barnes—I want to say a few words in regard to tracing this apple. My father planted some Hubbardston Nonesuch in Dodge county about 35 years ago, which he procured of Mr. Hill, who was selling Rochester trees at that time. He, I think, lived in this town at that time, and still lives here, and perhaps Mr. Hill can help us to trace that tree. Our trees lived only a few years, died as soon as they bore the first few apples. That was in Dodge county, about thirty miles from here.

The President—Mr. Kellogg, can you answer whether this was tested in the early days or not?

Mr. Kellogg—The Hubbardston?

The President—Yes.

Mr. Kellogg—I do not remember that I ever planted it. I think I planted it in Wisconsin in 1854. I planted everything that I could get hold of that I thought was good, and that went on to '55 and '57. I do not think I ever fruited the Hubbards-ton, but I found a barrel that was shipped into Lake Mills this past winter, and I came over to examine this apple particularly, and I am satisfied it very much resembles, if it is not identical with that barrel that was marked Hubbardston that came into Lake Mills, the only barrel that was ever received in that city.

Mr. Jones—I remember on the old farm where my father yet lives that the orchard was planted by an old gentleman from Scotland, who, after coming from Scotland to the United States, I think located in New York City, and then subsequently moved to southern Ohio, and after a residence there of a number of years came to southern Illinois, about ninety miles from St. Louis, and he planted a large orchard, that is, large for that time (it would be a very small orchard now), and in the selection of varieties he selected what they would plant in New York state, with the exception of possibly 100 or 150 Roman Beauty trees, he selected chiefly two of a kind, and fortunately this old Scotchman had made a register of the orchard, locating each tree exactly. Starting on a certain side he would count so many trees, and you could locate a tree so that there was no losing of the record. I remember among that list was the Hubbardston Nonesuch and the McAfee. I would pronounce this the same as Prof. Van Deman, the Hubbardston Nonesuch. It is not

quite so red as they grow in southern Illinois, or as they would grow in Missouri and Kansas, but that possibly may be accounted for by the northern climate.

Mr. Toole—In that recommended list we have another variety that is a stranger to our part of the country, that is, Sauk county. I do not know of any one who is growing the Dominion Winter. I would like to hear something more definite in regard to the hardiness of that, and whether we may put it on our list, as well as people down south of us.

Mr. Nye—Mr. President, I have raised the Hubbardston Nonesuch apple in Wisconsin and fruited it. I obtained trees from Elwanger & Barry in Rochester, I think it must be nearly twenty years ago. This apple, I should say, resembles it very much, as far as my recollection goes.

Dr. Loope—I would like to say in answer to what was said, that this apple with me has never shriveled and always grows mealy the longer you keep it. I have kept it in a warm place to try it. It grows altogether too mealy to be pleasant after a while, but it does not shrivel, it keeps the shape just as it is there, just exactly; I have never seen it any different.

Prof. Van Deman—The Hubbardston is a juicy apple, and almost any juicy apple will, under certain adverse conditions, become mealy, though, as Mr. Pendergast said, there are some of them that keep up to the last scrap that are juicy. I know that the Hubbardston will get mealy. I have seen them in many, many states, and I have seen some that were mealy.

Mr. Blanchard—If Mr. Kellogg is here I would like to ask him what his opinion is of the Northwestern Greening as an eating apple.

Mr. G. J. Kellogg—I went into the subject of the Northwestern Greening a year ago, with a view of bringing out all the points, and I went back on it as it is with us in southern Wisconsin, and the best specimens I found of it was when I was at Augusta, in institute work. The farther north I got the better the apple was, but it has been much better the past season in the southern part of the state. So far as the quality is concerned, it is about third rate in quality, but it is good when you can not get anything else. It is better than Ben Davis; as to its tree,

I have never seen anything of a failure in hardiness in southern Wisconsin, and in fact, as far north as I have traced it. It is the winter apple that is on our books today that is going to be planted, and the reputation of it is very fine, but it must be thinned, must not let two apples touch, if you do it will form a defect.

Mr. Snyder—I would like to ask in regard to leaves retained on apple trees, what effect it is going to have on the fruiting of our apple trees the coming year? I would like the opinion of any professor who understands the nature of that subject.

Prof. Taft (Mich.)—Mr. President, I would say in reply to that question that when there has been a late growth of the trees and the leaves are retained, there is danger of injury during the winter, but we find in our orchards where the trees have been sprayed, that even if there has been no late growth, that the leaves remaining on the trees hurt them, whereas on unsprayed trees the leaves dropped and the wood ripened. Then, as a rule, if there is no late growth, holding the leaves does not injure the trees.

The President—We will now take up the next subject on our program, "Orchard Cultivation," by F. H. Chappell.

ORCHARD CULTIVATION.

F. H. Chappell, Oregon, Wis.

Much has been said about cultivation of orchards. Much depends on where we are located. What will do in some climates will not do in Wisconsin.

I have lived in Wisconsin thirty-four years and have tried many methods with fruit trees. Have grown some in the sod; this does not give moisture enough in our extreme droughts. Two years I mulched them with tobacco stalks; this caused the trees to grow too fast and some kinds blighted very badly.

Moisture is essential to the tree or it will die. We can supply moisture in two ways; one way is to mulch with fine sand

four or five inches deep, the sand to extend as far out as the branches. It will receive the rain as it falls, will retain the moisture two months or longer and it is easily watered when needed.

Another way to furnish moisture is by frequent cultivation, at least once a week when it is dry; do not cultivate when the ground is wet. I had some apple trees in my nursery four to five feet high. I cultivated these trees very often, so the ground was as fine as ashes. The trees grew so fast that the new branches bent down and some of them were much out of shape. I stopped working them to check the growth and ripen the wood. Four or five years ago, in a dry season, a nurseryman sent me fifty Moore's Arctic Blue Plum trees unexpectedly and very late in the spring. I heeled them in a row and worked them very often; as they were on my way to a field where I had other nursery stock and crops to work, they were worked as often as twice a week. I did not lose a tree; all grew finely and did well.

Two years ago last spring I sold to a man living four or five miles southeast of New Glarus fourteen apple trees, telling him to work them once a week and make the soil fine. In the fall of 1899 he came to my place for some more trees. I asked him how many trees he lost of those I sold him and he said "Not one, every one is alive and doing well." I then asked what he had done to them. He said he did just as I told him, then he took a fork and showed how he made the soil fine, as he was a Swede and could not talk very well. Another man that has bought trees of me for five or six years past told me he had lost but one tree.

Now a little about sun scald. July and August are the most trying months with the tree, as the sap commences to form into a grain of wood the last of June, a creamy substance in a stand-still condition. When there is a lack of moisture in the ground the hot sun cooks this creamy substance on the southwest side of the tree, as we have seen so often in Wisconsin. The borers will then deposit their eggs in the bark and when hatched will go through the bark to feed on this creamy substance and then through the tree to finish it. I do affirm that there never was a

tree killed on the southwest side except for lack of moisture. Now try it and see for yourself. These are good reasons why we should cultivate orchards to retain the moisture. Cultivate lightly as late as the middle of August and later if very dry, making the soil fine to act as a mulch. Light cultivation will not start new growth.

Another great point is when to prune and how. Do this the first of July, then the sap is a creamy substance too thick to bleed much. It will crowd out a little where a limb is cut, but will help it to heal,—will heal much faster than at any other time of the year. If cut then the wood will not bleed to make it black-hearted. If you trim when the flow of sap is going up to feed the buds and to form the leaf it will bleed. If a tree is transplanted in fall or spring, trim it in the spring. Do not trim in the fall; the heavy freezing deadens the wood and cleaves the bark and makes the wound larger and as the wood is more dry it takes much longer to heal.

In trimming much care should be taken to cut out all inside limbs that will rub each other. Trim about a foot higher to give more sunlight to the crotches, then they will not split with heavy loads of fruit. By cutting out all fruit spurs in the lower branches the fruit buds will form above and the fruit will be of better color and larger, also the weight of fruit will bend the limbs out and give more sunlight to the limbs above.

Do not manure young trees, it will blight them and cause them to make too late a growth for the winter. When a tree will not make a proper growth with good cultivation then it will do to fertilize it.

I would further say, when you transplant a tree do not cut back any limbs. The next bud below the cutting has to take its place to form a limb and there is a little dead wood which will never grow any smaller, the remaining buds below will make out a thicket and you will have a brush heap for a tree. As much as possible remove all suckers as soon as they appear.

DISCUSSION.

Prof. Van Deman—I regard the subject of tillage as one of the cornerstones of the whole business. I was brought up in southern Ohio, where we had a pretty fair soil and a reasonably free rainfall, as you have here, and somehow it was instilled into my mind that cultivation was for the purpose of killing weeds. If I had been asked why we cultivated our crops, when I was a young man, I would have said,—“In order to kill weeds.” Now that is a fallacy, as I see it today. Not that the killing of weeds is not absolutely necessary, I think nearly always that is correct, that the weeds should be killed, but the fundamental principle of tilling is the stirring of the surface of the ground so as to retain the moisture in the sub-soil, or in the soil. That in my mind is the whole philosophy of tilling, and, as the gentleman who read the paper has very properly said, the lack of sufficient moisture is the cause of nearly all the ills of the fruit grower, and I may say, of every other kind of grower. If we can manage to keep the soil with the proper amount of moisture, we are almost certain to make a fair crop. Of course we can have too much moisture, there is no doubt about that. Plants of various kinds do not live in a soil which is saturated with water, but they live in a soil permeated by air and moisture, making what we know as a good tillable condition. If we can get fixed in our mind this one fact at this meeting,—I do not know how much you may have talked about it at another meeting,—but if we can get firmly fixed in our minds at this meeting that we are tilling our orchards and vineyards and berry patches and all our crops for the purpose of keeping the top surface as dry as possible, so as to have the under soil as moist as possible, we will have been abundantly paid, even had we come ten times as far as we have to this meeting.

Evaporation is the real cause of winter killing. We know that sometimes we have our trees and our berry patches and various other things killed out at the snow line. All below the snow line may be safe, even the tips of the branches under the snow, the fruit buds may be all alive, and I have seen cases where peach trees have borne just a few peaches where the

branches had reached down underneath the snow. Now that is because they were evaporated, and anything that we can do to prevent this evaporation is just the thing to do, and a large part of the winter killing is done long before winter ever comes. The exhaustion has already taken place to such a degree, that whenever the trying time comes on, the plants are not in normal condition, there is not water enough in the sap to carry it through the winter, and then we have this damage. That is, as I have before said, the real cause of a large part of the damage that results in all our orchards, and when I was in the state of Kansas, where I lived about 18 years, we used to have this same trouble that you have, only in a modified degree, because the temperature did not go so low. There we had sweeping blizzards that came down from the north and used to reach us with great violence sometimes in Kansas, and when they were prolonged the evaporation was, of course, prolonged, and it went beyond the point of resuscitation in many cases, so that we had not only buds killed, but sometimes peach trees killed, and it has been so in recent years in your state and the neighboring state of Michigan. If I may be allowed, I would like to mention one case, which of course many of you have read about, and that is the case of Mr. Morrill of Benton Harbor, Michigan,—Mr. Colin Morrill, one of the best cultivators in the whole United States, one of the very best, I have never seen anything in California to excel his method of tilling. He is not a deep cultivator, but a shallow and even cultivator, and he followed that kind of thing up in his orchard, so that his neighbors said he would bankrupt himself in taking care of his orchard. Well, the winter of '98 and '99, we all know that the latter part of the winter we had a terribly cold time; you had it here, they had it across the lake, and Mr. Morrill's neighbors' orchards,—they are in the peach business of course very largely there,—were killed almost root and branch, some of them were killed down to the snow line, others were killed through the larger limbs, some of those had the fruit buds killed, the twigs being in fair condition, while Mr. Morrill did not have anything hurt. He had to thin his peaches unmercifully that year. It was simply because he had sufficient moist-

ure in the soil to enable that tree to hold its own with the terrors of the climate. It is like it is with any of us, if we want to stand a cold spell one of these winters, what do we do? Why, we fortify ourselves with something good to eat, something that will make our blood warm, and so it is with the tree. If it is well fortified it will come through one of these trying times all right, and so it was with Mr. Morrill's trees, and he took about 35,000 bushels off about 40 acres. Now that is a practical example of this very idea that has been advanced by the gentleman who read the paper, and it will be so in any case. Probably we ought to talk about principles more than about individual cases, but the individual cases are all right as instances to mention, but the principle of tilling is just exactly what I believe and what I practice.

Mr. Blanchard—I would like to ask what mulch you would recommend?

Prof. Van Deman—Nature mulches every tree that she plants. Now I believe we could retain the moisture in the soil by mulching, but it would not pay on the whole; it will take too much time hauling the mulching into the orchard, sufficient to keep the moisture in the soil, and as soon as you mulch you bring the roots right to the top of the ground. Anybody that has ever been in the woods and dug up flowers, as we all have, will know how near the surface of the ground the roots are. You have all seen trees blown over, with the roots standing out in the air; you know how shallow the roots are. If you mulch once, you have got to mulch forever, or else you bare your roots altogether. Now the cheapest mulch is dry soil, and the drier and dustier that mulch is, the better. As soon as it rains what happens? The moisture goes into the soil, it makes ten thousand millions of little channels that it goes down through, and as soon as the rain stops, the clouds clear away and the sun shines and the wind blows and dries out the top of the ground, those little holes are all there, and just like the little spaces between the fibers of cloth, these little channels bring moisture from below the surface and it is wafted off into the air, and if we have weeds there, or any growing crop, such as a crop of grass in an orchard, it still adds to the evaporation, and the

consequence is that the ground bakes, it loses its moisture. Now we want to go on that soil just as soon as we can profitably do so, without clodding the ground, and break off the ends of these little tubes, as it were, these little channels through which the water is coming up, and make them just as fine and just as dusty as can be, and then we have done just what nature has done in the root, mulched it with loose fluffy matter that is not sucking the moisture out of the ground, but keeping it in nature's kind of mulch, practically, in the orchard.

Mr. G. J. Kellogg—Until the winter of '98-'99 I had believed that properly cultivated ground would withstand root-killing, but all through our state, through northern Illinois, throughout Iowa, we lost by root-killing, and the vineyards and nurseries that were best cultivated suffered worst. That is the only thing I have ever seen against this protection by cultivation. Where there was any snow, when we got as far north as Baraboo in this state, we struck a snow line, and from there north the nurseries and vineyards escaped, but we lost almost every grape vine in the southern part of this state that was cultivated for vineyards, acres and acres of them, and I know of isolated cases where the grape vines stood in June grass and had for years, that came out all right. I can not account for it. I believe in this mulch, I believe in this cultivation, but I think we ought to cultivate and mulch both. Mulch in the fall, mulch late, and keep up the cultivation, I think, in the orchard not later than the first of August.

Now I expected Mr. Chappell would have advanced his salt theory for moisture, as well as the sand mulch. I think his theory of sand mulch is all right and for practice I believe in his cultivation, but I can not understand why we lost so heavily the best cultivated fields and best cultivated vineyards and nursery stock three years ago this winter. That has upset all theories and all my practice as well. I believe in mulch, I believe in cultivation up to a certain time, then I believe in a growing crop, but not late, that will act as a mulch. We have been practicing that in our nursery for the last two years, and while others in the state have lost everything for the last two winters before this, we have saved our nursery trees by this growing crop.

Prof. Van Deman—Let me say just one more word. Mr. Kellogg stated, just before he sat down, one of the things that Mr. Morrill also does, and that is, to sow oats in his peach orchard. He sows oats. I have done the same thing, I have sowed other crops, but if we can cover the ground with some little thing like that, that will hold the snow and protect the ground in a certain degree. It does have a very salutary effect, there is no doubt about that. I thoroughly agree that that is very much better than to leave the soil in a perfectly barren condition, and oats we know will grow up in the fall in the cool weather and then be killed by the winter, and there is no trouble in the spring whatever. Of course rye will live over winter, but Mr. Morrill has tried a number of things, and I was talking with him not long ago, and he said that he now almost without exception covers every acre of ground that he leaves over winter with oats.

Mr. Jones—I am glad Prof. Van Deman had that last talk there about cultivation. I remember in 1872 we had a very hard winter in Illinois; we had a young orchard in which there were about 600 Ben Davis and about 600 Roman Beauties standing side by side. The Ben Davis is about two years older than the Roman Beauty. When we came to examine the trees along toward March, we found then that they were black at the heart, and in the spring of the year we went to our nursery, took out the very best Ben Davis trees we could find that were one year old (and I think I would add by way of parenthesis that this is the only kind of tree that I would plant, a first-class yearling), and we took up every one of those Roman Beauty trees except 20 and replaced them with these Ben Davis, and I have frequently heard my father say that he wished he had taken up the last of the 22 Roman Beauties he had; that it would have been paying work to have done so. Now that ground was barren during the winter; there was nothing on it. The way I am cultivating my orchard in Kansas is,—I cultivate early in the season, and then about July we stop all cultivation and Nature comes to our help, for she has sown the seed of crab grass all over the country. I do not know whether you know what crab grass is in Wisconsin, but we know what it is

in Illinois, Missouri and many of our western states. It gets about a foot or two high and at the first frost it drops right down and lies flat up on the ground, and I think Nature provided just that thing; it lies there like a carpet all winter.

Prof. Taft—Prof. Van Deman gave a very good report of Mr. Morrill's orchard, and I am glad to testify to its truth for the most purposes. He made one slight mistake, and if you will allow me I think I can show you that that mistake that he made in his statement will strengthen what he tried to tell you, that winter killing is very apt to be winter drying. He told us that Mr. Morrill's trees were uninjured; for the most part they were,—came through, root, branch and bud, with little injury. He did lose a dozen trees or thereabouts; these dozen trees were on a very sharp knoll where they had the west winds across the lake, the result was that it blew the snow off that knoll for some distance, whereas he had half a foot of snow covering the rest of the ground. Those trees where the ground froze to a depth of three or four feet were killed, I think, more by drying out than by the extreme cold, and the other trees with that mulch came out all right. Now we advocate oats as a cover crop from the fact that they hold the snow and leaves for the most part, and prevent the deep freezing. Of course the oats themselves form good protection, but where we have snow and they help hold it, it is worth all the more.

Mr. Barnes—I would like to add a little testimony in regard to mulching in both nursery and orchards. I am practicing sowing barley instead of oats in my nursery for a cover crop. I like the barley much better than the oats; it has a wider blade than the oats blade and takes less moisture from the crop than do oats and I like it better.

Mr. Pendergast—I have been thinking about this apparent discrepancy between Mr. Kellogg and Prof. Van Deman, and I do not know the conditions of the ground at the time that Mr. Kellogg speaks of, but it occurred to me that while capillarity brings the water up from below to the broken pores at the top, they have been broken and piled up, and the soil piled up loosely by cultivation, it is impossible to bring that water up from below if there is no water down there. Now I do not

know but the drouth had been so protracted that there was no water below for capillarity to get hold of, and that the trees themselves had taken out what had come up in the early part of the season and given that off into the air. We know that it takes about 400 pounds of water to make one single pound of dry matter in the plants, whatever kind it may be, and if it were a fact that the trees had gathered up what had been brought up by capillary attraction and placed within their reach and there was no more below, then these bad results would naturally happen.

AFTERNOON SESSION.

The President—We will now have the pleasure of listening to an address of welcome from the mayor of Oshkosh.

Mr. Mulba—Mr. Chairman, Ladies, and Gentlemen of this Convention:—On behalf of the citizens of the city of Oshkosh I bid you a cordial welcome to our city. It is the earnest desire of the citizens of Oshkosh that while you stay amongst us it be made a visit of pleasure combined with business. Let me say to you, gentlemen, that it is the earnest desire of the citizens of this city that you take in the sights of our city while you are here, and you will find that the city of Oshkosh is outgrowing what it used to be,—a village. You will find that the city of Oshkosh has a fire and police department that is second to none in the state; and I can point with pride to our educational system in this city. I can also point with pride to our public library. All those institutions it is the desire of the citizens of this city that you see before you leave our town. On behalf of the citizens of this city I will say that we esteem this visit very highly, for the agriculturist today is, you might say, the backbone of our country. They are that sturdy element that has made this country what it is. Their grain and produce is shipped to all parts of the world and have received gold returns that have enriched and made our country what it is, and a so-

ciety formed as the Horticultural Society is, no doubt performs great good. Why? Because you have an aggregation of men, and men of brains. God never endowed one man with all the wisdom and brain. He left some for others, and by association together you learn that which you all in an aggregation know, each and every man knows what the aggregation knows, and by that method, gentlemen, it has made you what you are. The greatest farm producing country today upon the face of the earth today is the United States, and what has made it so? Because the agriculturist today of the United States has studied,—has not only studied, but has learned from his brethren the thoughts of his brother and carried the information back to his farm, and used his brain as well as his muscle. Now, gentlemen, let me say that I welcome you here, and so do the people of this city, and we hope your visit here will be one of pleasure as well as one of business, and when you leave our city it is our desire that you carry with you the most pleasant memories of this city and its citizens. Ladies and gentlemen, I thank you. (Applause.)

The President—Mr. Mayor and the good people of Oshkosh:—I wish on behalf of the Society to thank you one and all for the kind reception we have received, for the kindly words you have spoken, for the cordial manner in which you greeted us on our arrival in your beautiful and enterprising city. We are well aware that Oshkosh can furnish a match for everything that can be found in other cities. As citizens of our state we feel proud of Oshkosh; we feel that you belong to us and that we have a right to share in the honors that belong to you. Let me thank you again for your kind welcome. Some one has said that kind words are never lost, even though forgotten. To at least some of us I am sure your kind words will remain a cherished memory. It is to be hoped at least that after our departure there will be no cause to feel that your kindness was either wasted or thrown away.

THE INDIVIDUALITY OF VARIETIES OF FRUIT AND WHAT THEY MEAN TO THE PRACTICAL GROWER.

A. L. Hatch, Sturgeon Bay, Wis.

One of the most important individual traits of varieties is their feeding power. This feeding power is the ability to obtain sustenance especially from the soil. Not only does this vary greatly in different varieties, but like all traits of individuality, indicates probable differences required in selection, cultivation, management and results. Strong feeders are those that under ordinary conditions make a good or vigorous growth, while weak feeders under similar conditions make less or but small growth. While the strong feeders are all-around hustlers and take care of themselves generally, the weak feeders require more fertility, better cultivation and general management to develop them to their best or prevent total collapse. Among apples the Duchess and McMahan are both strong feeders,—able to make a good growth where weaker feeders like Golden Russett and Walbridge might find too little nourishment within their reach.

Among strawberries the Wilson is one of the poorest feeders, never succeeding except highly fed and cultivated, and yet one of our members once referred to it as a gross feeder because it required so much fertility! The truth of the matter is that unless highly fertilized it can't get enough to make sufficient growth out of soils where such kinds as Warfield would make ten times as many new plants.

Not only should this feeding power be understood so the practical grower can bring the weaker feeders up to successful results by proper feeding, but also to prevent over-feeding of the vigorous feeders. To plant a McMahan apple upon extremely fertile soil or to highly enrich the soil where young trees of it stand is to make a weakness of its strength and produce a growth likely to be immature in autumn or subject to blight in summer.

Another feature of individuality is the branching and rooting habit. It is a well known fact among nurserymen that there is a corresponding similarity of the roots and tops of trees,—those having fine and numerous branches having the same character of roots, while those having strong, wide spread tops would possess roots of similar character, and so on through all the varying degrees of form trees many assume. A Tetofsky or a Repka tree may possess too few limbs and incline to grow too tall and slim. Such trees might be benefited by shortening in the tops to induce more branching, while a Golden Russett might require liberal pruning away and thinning of its top to remedy its habit of branching and re-branching that gives it such very bushy heads.

The blooming and fruiting habit of varieties is a consideration of great practical import. What commercial small fruit grower has not at blooming time viewed his strawberry beds with intense interest? When he has seen his Beder Wood, his Enhance or his Van Deman plants white with bloom has he not felt a little exultation at their wonderful promise? And when he has looked at his beds of Crescent and Warfield with their meager showing of flowers has he not felt that possibly he is mistaken in having planted so many of them? Then after the season is over, won't he find that the Wood and Van Deman were gone in a week, while the Crescent and Warfield were on deck smiling for nearly a month?

A few years ago at one of our meetings, Pres. J. M. Smith said that he got five pickings of Wilson, to which Mr. Geo. Kellogg replied that he got ten pickings from his Crescents. Pres. Smith also said that he usually got but one crop from a bed of Wilson if the first crop was heavy. If, however, the first crop was moderate and plants not exhausted, he kept the plants over for a second crop, but no longer. To this Mr. A. G. Tuttle replied that the original bed of Crescents bore five good crops consecutively.

Here then we have widely different traits in fruiting based upon individual differences in methods of flower and fruit development. While one kind grows its entire crop within a week or two, the other brings it on gradually and continuously

for twice or thrice as long. It is this gradual and continuous development that gives such wonderful results with the Crescent and Warfield. It is true that many of these varieties making a crop in a shorter time may give more wonderful show fruit or even rival the crop, but to do this they are more exacting of ideal conditions.

It is probably true of every variety of strawberry ever introduced as new that it was claimed to be strong growing, large and vigorous. And yet the Warfield is one of the smallest plants found in the nurseries. As a rule 500 plants of Haverland, Parker Earle or Brandywine are equal in bulk to 1,000 Warfield. When planted the Warfield will sooner make a full matted row than the others and in yield holds its own more fully in popular esteem than any others. While some kinds are growing large plants with huge and many fruiting crowns, the Warfield seems to delight in spreading out and furnishing each crown with a root system of its own.

There is still another matter of great importance in fruit culture connected with the individuality of varieties, and that is the power to resist the attacks of fungii and insects. Not only are rots, molds and mildews partial to some kinds, but insects as well have their preferences. In the latter regard the Japan plums have proven less susceptible to attack from shot hole fungus and the cherry and pear tree slug than either the American or European. The American grape has been very largely used by the French for stocks to replace their vineyards destroyed by the gall louse.

In raspberries, Loudon has been very badly infested with anthracnose in our own fields, while Cuthbert and Marlboro are almost entirely free from it. With some forms of fungii upon some of our fruits we are at present helpless and can only reject them from our plantings. With others, however, we can deal more hopefully. The Fameuse apple is very much subject to injury from scab, but with good culture and vigorous growth becomes more resistant to its attacks, and with spraying properly done is almost entirely so.

This brief paper can only deal with the most salient individualities of fruits, of which the following have been indicated:

1. The feeding power of trees and plants.
2. Their growth habits of tops and roots.
3. Their blooming and fruiting methods.
4. Their powers to resist fungus diseases and insect injury.

What these mean to the practical grower has been indicated as requiring different selections, culture, fertility, pruning and management. To classify horticultural differences and to catalogue individual traits philosophically is a work of profound study well worthy the time of our Experiment Stations. This classification should not be along the lines of the nursery catalogues but rather based upon those physical differences that involve radical differences in the treatment of plants themselves. To illustrate: Suppose we are harvesting apples and have made a successful shipment of Tetofsky of the entire crop at one picking. Red Astrachan are also ripening, appearing well colored, the whole crop is harvested at once. While the Tetofsky may be entirely satisfactory it is very certain the Red Astrachan will include many over-ripe and under-ripe apples, and required three different pickings at intervals of several days to secure the crop in good condition. The strawberry plant very readily lends itself as another illustration to show how individualities affect results.

The Parker Earle grows very short runners and as a consequence the new plants set themselves down very closely around the parent plant. The Splendid grows much longer runners and its plants are further apart where natural matted rows are grown. The former may require to have this tendency to crowding remedied, while the latter may adjust itself rightlly. The Wilson may grow strong and short fruit stems that crowd the berries into a cluster that makes it difficult to pick the fruit without injury. The Warfield and Champion may have longer and slimmer fruit stems that make it much easier to pick and save the fruit without injury.

The Warfield and Brandywine may have a deep rich red color and fine glossy berry with solid red flesh, while the Glendale has no gloss and a dull brown calyx of large size that makes a box of berries look like a bunch of dry leaves. In fact there are many degrees of good looks and bad looks, good keeping and

poor keeping, satisfactory marketing and poor marketing involved in these little differences.

If we turn to the question of the fungus and insect resisting powers of plants we shall probably desire to know in what way plants protect themselves and what we can do to make them self-defensive. In the apple we may find the twigs carrying a hairy covering over the buds or a multitude of little specks that the botanist calls lenticels. Are these peculiarities standing guard against the entrance of our little fungus foes or are they ambuscades where the spores gather for the attack? In the grape we find the Concord has a velvety under surface on every leaf that may guard the numerous stomata, so the spores find more difficulty in getting into the leaves than they find in the Elvira, the Brighton or Agawam where this velvety covering is lacking. The twigs of the Abundance plum and the Montmorency cherries show in autumn a glossy, varnished-like surface from the presence of a waxy cuticle, upon the perfection of which the defensive power of the tree largely depends to save itself from many foes. How these numerous peculiarities in all their many degrees of development serve useful purposes, and in what way they may be improved, are questions of interest to every practical grower who wishes to grow fruit crops and avoid the woes and calamities of the careless and indifferent. Each grower notes some of these things. From many sources let us aggregate wisdom so we may grow more fruit, better fruit and with less labor.

Paper on "Tree Fruits," etc., written by Mr. Hirschinger, was read by Mr. Toole.

TREE FRUITS AND WHY FALL APPLE TREES HAVE BEEN MORE HARDY THAN WINTER APPLE TREES.

C. Hirschinger.

"Tree Fruits and Why Fall Apple Trees Have Been More Hardy than Winter Apples Trees" is the subject on which it has fallen my lot to speak of today, and when I saw what my subject was, and when President Johnson told me that all papers were to be short, I felt very much like not writing a paper at all, but fearing that the reporters would muddle up what I did say, concluded to write a short paper on tree fruits, and as my paper is to be short it will not be possible for me to speak of but a few of the leading kinds of tree fruits, and such as we can raise here in Wisconsin principally.

My first lesson on tree fruits I obtained in the state of Ohio when but a small boy. Our school teacher, Jacob Anchutz, was a pilot on the Ohio river plying steamboats from Pittsburg to Cincinnati in the summer, and in the winter taught the school to which I went, and in the summer of 1844 he invited the school children to come to his house and we went there and our teacher took us to the banks of the Ohio river and there showed us an orchard of about one-half acre. In this orchard were then quite large trees of apples, and also quite a number of Papaw trees. The Papaws were ripe and the children and teacher were soon engaged eating them, and those acquainted with a good, ripe Papaw will imagine how we relished those. We sampled the apples but only found one variety that was fit to eat, and that was a very small apple called the Lady Apple, and one barrel of those apples at that time would sell for at least four times as much as any other variety at that time. The cattle were also there in this orchard, and we noticed that they were busy picking up the buck-eyes from the ground and eating those, and now comes the history, as I remember it at this writing, of the planting of this orchard. He told us how a man by the name of John Chapman, or, as he was familiarly known, as John Apple Seed, had planted this orchard. This John Apple

Seed, as he was called, got his name from the fact of his having from his early manhood been a wanderer, spreading the apple seed over the wide extent of the territory in the Ohio valley. Part of the time he traveled with a horse and wagon; once he used a canoe, but a greater part of the time he went on foot carrying his seed in immense leather bags. He got the seeds from cider presses in Pennsylvania, and he would travel day after day, and sometimes nights, planting seeds as he went, and placing a rude enclosure around each planting spot. He continued in this way until his death, which occurred in Ohio.

From these nurseries sprang the beginning of the large apple orchards of Ohio and Indiana, which states at one time were foremost in apple culture in this country. Happy must have been his life, always intent upon making the wilderness fruitful, taking no heed of his personal feelings. This man died a poor man and no monument was erected over Apple Seed John's grave to mark the spot where his ashes rest, and little would we know of him or his labors had not one John Sights lived. He visited many of those rude orchards and secured scions of the best and introduced them to the public.

Apple trees were brought from the east by the Romans. The small crab, it is said, was formerly the only species of apples, but it has improved under cultivation until it has gained the perfection of the present time, and it has long since been acknowledged to be the most precious fruit and at this time with our own Wisconsin additions of the Wolf River, the world's prize taker, the McMahan's White and Newel's Winter, the best known cooking apples, and the proud Northwestern Greening, it certainly is the most precious of all tree fruits, as it keeps so that we have fruit the whole of the year, and beats the doctor in many cases, so that it shrinks his income considerably.

The first list of apples by the Romans was 22. This list has increased to such an extent that it is doubtful whether 3,000 varieties would include all varieties at this time.

The cherry is next in importance in Wisconsin, and in its wild state is a native of most parts of the United States. The cultivated varieties were introduced from Asia Minor and planted in the gardens of Italy by the Romans, B. C. 69 years,

and is still largely grown there after more than 2,000 years ago. Pliny mentions eight varieties cultivated in Italy in the year A. D. 71, and from that date to this time the varieties have been gradually increased until, at the present time, about 200 varieties have been described, and of those varieties the early Richmond, late Kentish, English Morello, Osthime, Montemora and Wragg and Jefferson comprise all of the varieties that I feel safe in planting here in Wisconsin, and when planting cherry trees I always plant for the birds as well as for myself. The disposition of Americans has induced the planting of cherry trees for ornamental or shade trees, while examples of reward pecuniary from sale of fruit on trees so planted has been additional inducement. The symmetrical form and rapid growth of the cherry fits it well for a street tree throughout the country. As early as 1760 A. D. in Connecticut it was the practice to plant cherry trees along the road side, and later J. P. Kirtland of Cleveland, Ohio, planted cherry trees as a street tree upon the entire front of his farm. We also have accounts of long avenues of cherry trees in Germany planted by desire of the respective governments, and recent travelers have written repeatedly of and described them in such a manner that it is strange our people have not as yet acted upon the plan to the advantage of their pecuniary as well as social interest. These avenues are planted in Germany by the desire of the governments, not only for shading the traveler, but in order that the poor pedestrian may obtain refreshments on his journey. All persons are allowed to partake of the cherries on condition of not injuring the trees, but the main crop when ripe is gathered by the respective owners of the land on which it grows. If this was extensively practiced in this country would it not render less of one crime in the summing up of his annals, i. e., the robbing of orchards, and possibly a law like that enacted in the territory of Erfarth in 1795, which is still the law at this time, would be beneficial. It provides that in case of the robber not being discovered the district in which the offense was committed should be obliged to make compensation for the damage sustained. This made every individual interested in preventing depredations on his neighbor's property. The uses of the cherry

and its good qualities are so well known to all that I need not repeat here.

The Plum.

The plum is found in its wild state throughout the middle and northwestern sections of this country, but the original parent of the cultivated varieties is supposed to have come from Asia Minor. The facts of the production in our states of so many varieties esteemed attest the adaptness of both soil and climate. My thoughts go back to the days of my youth when in the state of Ohio I used to roam in the orchards and eat the delicious German prunes and the blue, yellow and red plums grown on trees brought from Wittenberg, Germany. Sweet, luscious and bursting open on the trees where I could eat to my heart's content, and then stop now at this point and say that for Wisconsin it is safest to plant Miner, Desoto, Wolf, Wild Goose, and I add Lombard and Yellow Egg for a change occasionally.

To know how good peaches are you want to go into the orchard and pick them fully ripe, and then when you see the baskets of peaches on the market you will long to be back in the land where peaches grow to wile away a month in their orchards. I am sorry to say that as well as I like peaches I can not recommend them in Wisconsin, to planters to set the trees. I have done so several times but have only succeeded in raising three peaches, which equal in test to a raw potato, and I will leave the raising of peaches to coming generations.

The pear is a native of Europe and Asia, and although it has long been cultivated it has only been used for cooking previous to three hundred years ago, and whilst some varieties are most excellent eating, we still have many varieties only fit to cook. The only varieties out of 40 tested at different times that have at all paid me for my attempts are Flemish Beauty and Kifer.

There is no end of fruit trees, but I must hop, skip and jump along as my paper is already too long. But there is the orange almost as cheap as apples and good enough for some to eat. Lemons to give us delicious drinks, the banana I will have to rule out of order as a tree fruit, as it seems to try to be a monopoly of itself, and it does not seem proper for it to try to drive other fruits out of the market by producing so large a

bunch. My favorite tree fruit when a boy was roasted chestnuts, gathered fresh from the tree, of which there were many on my father's farm in Ohio. Papaws came in their season and in the winter I would amuse myself cracking walnuts, hickory nuts, etc. Of the beach nuts I used to gather for coffee and it tasted better to me than Java or Mocha does now, whilst sassafras and spice wood tea tasted excellent, but I am not in Ohio now, but in Wisconsin, and whilst there are many things I miss now, yet we could have more than we have now by trying hard.

Now the question comes in Why are fall apple trees more hardy than winter apple trees? I answer, first, because the summer and fall apple trees ripen up the wood early in the season, and go into the winter with wood fully ripe. The apples are picked early and the trees have ample time to get ripened up and ready for the winter, whilst the fruit on winter apple trees hangs to the trees till late in the fall, all the time drawing nourishment from the tree till late in the season, and the early frost frequently catches the trees before the twigs are ripe, and to help it along frequently trees are too highly fed, which tends to prolong the growth till late in the season, which adds to the mischief.

Russian varieties usually ripen up earlier than American sorts, which accounts for their being more hardy, but there are not many varieties of Russian winter apples. It is also a fact that we often allow our winter apple trees to bear too heavy crops and thereby weaken the trees to such an extent that a hard winter may prove fatal to the tree.

When this subject was dealt out to me I was aware that there would be a difference of opinion, and I went to work to get help and after widening the scope some wrote to several nurserymen and asked them their views. Of the several written to only one had the courage to answer my questions, and that was E. M. Sherman, and here is what he says:

"With regard to the questions you ask, viz.: Why fall and summer apple trees bear younger than winter apple? Why fall and summer apples are more hardy than winter apple trees? and also Why winter apple trees blight less than summer and fall varieties? would say that in my way of thinking one answer

will cover all of these questions, viz.: that the season of a fruit has nothing whatever to do with these matters. If such happens to be the case, it is a mere 'happenstance,' and that is all. I do not think the season of the fruit has anything to do with these matters. One of the earliest bearing varieties of apple we have is Ben Davis, and Red Astrachan one of the tardiest. We have many more varieties of summer and fall apple than of the winter, hence can sort from them many varieties that will stand the winter better. I also think that the fact that we grow more varieties of summer apple accounts for the fact of their blighting more than winter sorts. There may be other answers to this question, and doubtless are, and I may not be within ten miles of the bottom of it; but that is the way I have always looked at the matter."

Mr. Sherman has named Ben Davis of the winter variety as an early bearer and Red Astrachan as tardy. Those two varieties, to my notion, are exceptions, and I will submit the further consideration of this subject to the Wisconsin State Horticultural Society, and will not be much surprised if doctors disagree.

DISCUSSION.

Dr. Loope—If I understood right, I want to take exception to the statement of the reason that the fall apple trees are more hardy than winter apples. That reason is as he assigns, that the wood ripens earlier and gets matured better. Now that statement may possibly be true in the abstract, but I do not believe that that has anything to do with winter killing. In fact, I do not get any trees winter killed in that way. I never have seen in our orchard a tree killed from the top, and I do not believe that many of you have. It may be possible sometimes that the top kills, but with us it is a very rare thing, that is, from winter killing I understand, and I want to enter my protest against that. I believe that the killing comes from the root in our section,

Mr. Barnes—I have to enter my protest against the doctor's protest. I believe that if a tree does shed its leaves early in the fall that the wood ripens up, as we term it, that the tree goes into the winter sound and firm, that it will stand more cold, more drouth and more exposure than it will if it is soft and sappy and pulpy. I have seen thousands of trees in which the leaves were killed from the cold winter, and I do not live so very far from where the Doctor does either.

Dr. Loope—Of course nobody denies the proposition that he makes; nobody can deny that if they do not ripen up they are liable to kill, but I am taking the ordinary season where they do ripen, and I say his apple trees do not kill from the top under those circumstances; he will not find that.

Mr. Toole—In regard to this matter of lack of maturity and the consequent killing under certain conditions, I have no doubt it may work to a considerable extent in the nursery, but I think that where there is any lack of ripening, it is simply by the younger growth, the effect of it does not extend very far into the tree, and I do not think that under the circumstances it makes the body of the tree weak.

Mr. G. J. Kellogg—I agree with both parties in this question, and I do believe that a winter variety that grows late in the autumn will have a tender twig, and I have known them to kill from the top down, but when the root kills and the whole top is left, then how are you going to account for it? It has nothing to do with the varieties, and I believe the blight cuts no figure in this question at all. I do not believe the blight has anything to do with the hardiness of the varieties. I believe there are just as many blighters, in proportion, among the winter varieties, as there are among the summer varieties. I will except the Russian stocks, because they are all blighters, almost, and there are but few winter apples in the list, but I do believe that this late fall growth is productive of tender varieties. Now I think the reason we can not grow Rhode Island Greening and Spitzenberg and Baldwin is because of the tendency of those varieties to hold the sap up late in the fall. When you get varieties to ripen up like the Duchess, why that settles the question; that is hardy. I think there are many of our winter va-

ieties now that hold their leaves right up to freezing, but we have had no test so far yet, we have lost nothing, shall not lose anything if this weather holds, and this season this question of ripeness and tender varieties and blighting you can prove anything you are a mind to in a convention of this kind.

Mr. Barnes—For illustration, I am trying to grow two Baldwin trees and two Spitzenberg trees in Waupaca that killed down near the ground, and several shoots grew up this season of those two varieties. I had an order for root graft trees of the Baldwin varieties, and I went out and examined those shoots and they are covered with leaves and they are dead and black for at least 8 inches on top. Those are winter varieties. The wood is soft, but not very, you can pinch it down now on warm days, and they are killed eight or ten inches back.

Mr. Toole—I think the question as to whether trees do or do not kill in the top was raised in this discussion. It seems to me that the hard winter of '85 to '86 was a clear case of top killing, and it would also go into the question of maturity of tree. I think in that winter that we were satisfied that the juice was frozen right off the tree, that that was a case of killing from the top and not from the root; I think we are all agreed in that, and the mature trees did not help it any.

Mr. Roe—I had an experience with a Northwestern Greening tree two years ago. I took cions of those trees and top grafted 14 Duchess, and two or three weeks after the graft was taken from the Northwestern Greening tree I saw the tree was dying, in fact, a week from that time it dried right up and was dead and these grafts have all done nicely, probably there was not a loss of ten per cent. Now that tree must have died from the root.

Mr. Scott—I would like to enquire in regard to the conditions prevailing when it went into winter quarters. Was the condition of soil dry, were these roots killed from freezing dry, or was there plenty of moisture?

Mr. Roe—We lost a few trees a year ago last winter, and I think the reason was because there was a lack of moisture in the ground, but the same winter,—two years ago it was,—we lost a number of Northwestern Greening; they killed half of one

side of the tree, killed right down to the ground entirely, never leaved out at all in the spring and dried right up, and the other side seemed to be more vigorous next year than it was before. I can not understand that. One tree had killed on the south side of the tree and another near it killed on the north side, and they were right in the center of an orchard where the exposure was about the same.

Mr. Sperback—The discussion has brought out the point that there is not so much in the killing of the top and root as there is in the variety of the apple that is grown. I believe there are varieties that can not be grown in Wisconsin, and I believe if you plant such varieties in Wisconsin that they will die both in the root and in the top, and I have often thought that stimulation did a lot,—that growth was an injury to a tree.

Mr. Floyd—The Northwestern Greening often kills part of the trunk by the bark freezing and bursting. If you will examine those breaks you will find perhaps the bark was loosened on the side that the tree died on, and that on the other side it did not loosen clear around, sometimes freezing up in the fall. If we have a very hard winter the bark will loosen clear around and of course the tree has to die.

The secretary here read report on prize essay contest.

REPORT OF ESSAYS.

Number of essays on Planting and Care of Apple Orchard—3.

Mr. A. D. Barnes was awarded first place and Geo. M. Tong second.

Number of essays on Planting and Care of Grapes—3.

Geo. J. Kellogg was awarded first place and no second was given.

Number of essays on Planting and Care of Strawberries—7.

L. A. Carpenter was awarded first place and H. E. McGregor second.

Number of essays on Planting and Care of Raspberries and Blackberries—2.

Geo. J. Kellogg was awarded first and C. Phillipson second.

Number of essays on Planting and Care of Flowering Shrubs—1.

First premium was awarded to Geo. J. Kellogg, the author.

The President—We would like to have the essay that took the first prize read.

PLANTING AND CARE OF THE APPLE ORCHARD IN WISCONSIN.

A. D. Barnes, Waupaca, Wis.

To assure a reasonable success in growing apples in Wisconsin the following requests are most essential, namely:

1st. That the party engaged in this vocation shall be possessed of faith, industry, be careful, diligent and painstaking, with a love for and some understanding of the business in which they are to engage.

2nd. That the soils and sites are suitable for the production of choice apples, that the demands and markets are good and convenient, so that the fruits can be put to the consumer in prime condition.

The best sites are usually on the north or east sides of ridges or on high elevations, with some kind of a natural or an artificial wind break on the south and west sides, either hills, buildings, hedges or timber belts,—yet other sites and surroundings are sometimes desirable and successful, but an orchard should never be planted in low, damp, cold soils, neither in poor, dry sandy soils that lack fertility or too loose and leachy to retain artificial fertility when applied. The best soils are a composition of sandy clay surface loam over a heavy clay, granite subsoil which contains granite silicia, traces of iron, marl and lime.

The ground should be carefully plowed and deeply subsoiled at least once or twice before planting, thereby enabling the young trees' roots to reach and consume fertility, make root

growth, and at some depth from the surface, and yet have a good mellow bed below.

When the ground is too stony or too hard and subsoiling not practicable by the usual process, a splendid site can be made at a very small expense by making a small hole with an iron bar or a pod augur some 20 or 24 inches deep in the bottom of the tree hole, in which insert a small piece of dynamite with cap and fuse attached, tamp with clay firmly, and discharge it. This will make a splendid site for a tree and will conserve moisture in a dry season, prevent root drowning in wet seasons, permit deep rooting and thereby prevent killing out in dry cold winters.

It is best to select and prepare the site in the fall. The rows laid off in square blocks or in quincunx form as fancy or surroundings dictate. (More trees can be planted on an acre in the quincunx form and the ground better covered and wind drafts better checked than by the square block system), usually twenty to thirty feet apart, and I prefer to have the trees from one-fourth to one-third closer together, north and south, that each tree may serve to protect its next one from the hot suns and south winds. The holes are best dug or prepared in the fall, and the work greatly facilitated by plowing deep furrows, crossing each other where the trees are to stand.

Wisconsin grown nursery trees can be successfully transplanted either in the fall or early spring. When the ground is wet and the season favorable I like fall planting very much, and when this is the contrary I prefer early spring for setting trees, and as a usual thing, the earlier the better. I am a strong advocate of Wisconsin grown and adapted trees for Wisconsin orchards, and would not dare to plant a foreign tree in the fall. Trees should be selected from an adjacent nursery, and none but young thrifty stock, and with good fresh roots. Trees should be carefully dug and packed in moss and burlapped around the roots, and the tops carefully strawed for safety while en route from the nursery, whether by team or cars, and diligent care taken that they do not lay in the sun or wind, either in the nursery or orchard, and should be immediately unbundled and carefully sprinkled and healed in as soon as destination

is reached, and only a few taken out at a time for planting. Good wide holes deeply subsoiled should be prepared and the trees set on a small mound of fresh mellow surface soil. The roots carefully and freshly pruned at the outer ends and from the bottom sides, so the new cut will come in close contact with fresh earth. The tops cut back to correspond with the roots, and the lowest branches set on the south or southwest sides, and the tree leaned that way, or they will lean to the northeast as they grow. Fine earth should be carefully packed with the hands amongst the roots and fibers, each root carefully straightened out and the earth firmed around them, and lift somewhat dishing towards the tree; set a little deeper than it stood in the nursery, stake and tied in position, and carefully wound with rye straw, or a board or an evergreen set on the south side of the tree to prevent sunscald. The surface of the ground carefully mulched with coarse litter. Water should always be used freely from a sprinkling pot while planting and the earth carefully packed down. The ground should be carefully cultivated and covered with some kind of hoed crops for a few years. Care should be exercised to prevent making deep ditches or high ridges, and plows, tools or whiffle trees never permitted to come in contact with the roots or trunks of the trees. The ground immediately around the trees carefully forked over and loosened up, from one to three times each summer, and remulched to stimulate growth in the early part of the season. It would be well to remove the mulching early in August, to check the growth, and ripen up the wood. Make a small mound of earth around the tree in October, and replace mulching in December after the ground is frozen. The orchard should be seeded to clover for a few years at a time for cleanliness and to add fertility to the soil and to prevent the earth from washing and heaving, also to keep the ground in as even a temperature as possible. All suckers or sprouts should be pulled off at the base as soon as they appear, and the trees carefully pruned each year just before the sap starts in the spring, usually in the month of March. Care should be taken to thin out the inner branches and leave more branches on the south side than on the north. Use smooth cutting tools and fine toothed saws. Cover all

large wounds with paint or wax, remove all brush and burn immediately. Plant but few varieties, visit surrounding orchards and consult with practical growers and nurserymen; far better accept the advice of a local nurseryman than any traveling dealer; never buy iron clad nor blight proof trees, they do *not* exist. Plant those varieties doing best in your neighborhood, and on similar sites and soils, and for the purpose desired. For home use many varieties, even crabs and yellow apples. For market, fair-sized red apples always sell best. For a general purpose orchard, and in most parts of Wisconsin, Yellow Transparent for very early; Duchess for summer; Haas, Wealthy, McMahan for fall; Wolf River, Walbridge, Northwestern Greening and Tallman Sweet for winter, with a Martha, Whitney, Sweet, and a Gibb Crab, will be a good selection, yet for certain localities there are many other very desirable varieties. Some varieties are more subject to blight than others. Trees that make a fair growth usually blight less and are less liable to winter kill than those that are stimulated to an excessive growth. Blighted trees or branches should be cut out and burned as soon as it appears. Care should always be taken to cut back into unaffected and sound wood, and do not handle blighted branches and the sound growing twigs at the same time, as this will transmit blight. Handle blight as you would a small pox patient, inoculate against it by planting those varieties less subject to it, and eradicate the blighters. Fertilize the orchard alternately with a light crop of good farm yard manure, and a sprinkling of wood ashes. Plant low or medium topped trees, aim to keep their tops low and broad, spray your bearing orchards with the Bordeaux mixture, the last of March and twice after blossoming, with same solution, only *one-half* as strong. When trees are small and overburdened always pick off one-half or more of the fruit as soon as set, and the balance will mature better, and measure as much in the fall, be better colored, better flavored and worth twice as much, and your trees much longer lived. Remember that 'tis the maturing of the seeds for the purpose of *reproduction* that drafts on the energy and vitality of the tree and not the growing of the pulp of the apple. Gather up and feed or burn all drops or wormy apples during the early summer,

they are great breeders of pests and are usually affected, or they would not have dropped. Go over the orchard many times when harvesting and pick only the largest and most matured specimens each time, and you will be surprised to see how fast and how large the rest will grow. Never shake or thresh off apples, not even cider apples, if you care for your trees. Neither plant young trees in an old orchard where an old tree has grown many years and then died out, for that site is famished and they will not succeed there, unless the earth has been renewed and the trees wide enough apart to permit air and sunlight around the new tree.

Market each grade and variety by itself, and from a peddler's wagon, or in crates. Always put as good apples in the middle of the basket or crate as on top; the day of the closed apple barrel is doomed. Customers want to see what they are buying, and besides a barrel is too much at a time as a usual thing, as they usually want the whole package. Use the best apples yourselves. Sell your surplus fancy ones for a *fancy* price, the medium at a good price, and the culls for whatever you can get, and sell them as *culls*. Apples should be gathered in the early morning as soon as the dew is off, or in the cool of the evening, and should be kept in an airy and shady place in hot weather, handled as little as possible and with gloves, so to speak, and never wiped or polished until ready to show up at the fairs, or ready for dessert, for bruising them or removing the bloom—nature's balm,—sets them to decaying. For winter use apples keep best stored on shelves in a dark, dry cellar, at as close to the freezing point as possible.

DISCUSSION.

The President—We are happy to say that the great state south of us sends us today as representative the secretary of the State Horticultural Society, Mr. Bryant of Princeton.

Mr. Bryant—Gentlemen, I am not prepared to make you an address. You are a little mistaken; I am not secretary of the society; it is a brother of mine. I am glad to be with you here.

We of Illinois appreciate your work very much. In our territory we have a great variety of soil and climate; the northern portion of our state is very similar to the southern part of Wisconsin. We are very much interested in the fruits you are trying to originate and grow up here, and hope you will find many that will be of interest to us. Our society for the last few years has had some very interesting meetings. This year our society is divided into three different societies; we have our northern, central and southern societies and our state society, and all the different portions of it are well represented at the meeting. Our meeting this year was at Champaign. They have built a new horticultural building there, where we held our meeting and it will give us a much greater interest in horticultural matters in the university than we have ever had before. We had a better display of fruit than we have ever had before at a winter meeting. Of course our people feel pretty well over the success of our exhibit at Paris; we think that it will stimulate the planting of orchards in our state very much in the next few years. We have made considerable arrangement for an exhibit at Buffalo; we do not know how much that will amount to; it depends on how liberal our legislators will be this winter. I am glad to see so many attending here, and so much interest taken in all matters.

The President—We will now take up the subject of improvement of trees and plants, by the president of the Minnesota State Horticultural Society, Mr. W. W. Pendergast:

IMPROVEMENT OF TREES AND PLANTS.

The Chinese worship their ancestors and so plod along their weary, unprogressive ways in the tracks which their grandfathers left behind them. As a result, in the race of nations they are distanced. The ones who come out ahead are they who, setting their goal far ahead, call into requisition brain and muscle and a determined will, to reach it. It is for us to take our

choice of the two ways. Inertia whispers, "Take it easy; follow the beaten road." Progress cries, "Advance; push on to sublimer heights; the procession is forming, the music is inspiring; fall into line, not at the tail end but get as close to the band wagon as you can."

The great secret of success in life is do some useful thing well. A little better, if possible, than any one else can do it, or at least *does* do it. We are interested in fruits, trees and flowers, three things which, after a few absolute necessities, have done more for man than all things else combined. Bread and clothing make life possible, appreciation and love of the beautiful make that life worth living. We therefore devote part of our time to supplying our physical wants and another portion to the cultivation of our moral and aesthetic natures along the line of horticulture. As has been intimated, our work should be marked by its superior excellence. To be satisfactory to ourselves it should be done better than the best which others are doing. If not we are falling short of our highest duty, which means failing to grasp the highest enjoyment. What shall we set ourselves about, then?

The most valuable of the shade and ornamental trees which are adapted to the conditions of the locality where they are wanted should be wisely determined, and such trees should be artistically placed around the home, the field, the garden, the cemetery or by the road side, relieving the desolation, and sometimes the savageness even, of the natural parching heat of summer and winter's cold tempests, all who come within their charmed precinct. Such selection of trees and such disposal of them will call for the wisest planning, the best judgment, the highest skill. Tree planting can be done in a hap-hazard, slipshod way, by Tom, Dick or Harry, but did we not set out with the full determination to do a little better than the "ignoble vulgar" whom the poet Horace so heartily despised? Were we not, if possible, to surpass the very elect? Then we must educate ourselves by persistent, concentrated thought based on demonstrated facts, which is in fact the only education of any value.

The various fruit trees must be increased in hardiness of

root, stem and bud; in size and beauty; in flavor and keeping qualities of the fruits.

Desirable exotics should be sought out, introduced and made to feel themselves at home with us, but above all our *native* kinds, the old friends we have loved from childhood, and would it be too much to say, "who have reciprocated that affection," should be carefully cultivated, their faces made more charming, their fragrance more delightful, their season prolonged, their hardiness, where not already iron clad, increased.

How shall all these desirable improvements be brought about? How does nature, unaided by man, manage to effect a change for the better in the growth and vigor of her plants? Supposing a neglected part of the garden is filled with mustard seed, a hundred or more to the square foot. All of these cannot live, grow to their normal height, bear seeds and thus answer their lives' great end. Watch carefully day by day and you will see that the strongest and most vigorous crowd out and overpower the weaker ones, which are doomed thereby to death. Those best fitted to their surroundings, as shown by their superior vitality and consequent thriftiness, live to reproduce their kind, and this process, continued year after year, gives rise to a superior strain, as far as health, hardiness and vigor are concerned, of the weed which we are considering. The fact that no two living organisms are exactly alike is of the utmost importance to the progressive horticulturist whose chief desire is to deduce principles from established facts and from them work out some practical good. From the slightly different plant of a kind which promises a suitable reward for his zeal, patience and skill, he wishes to evolve a new and more valuable variety. He will select the ones which come the nearest to his ideal and then proceed to widen the gap between these and their fellows, always keeping in view the particular excellence he had in mind at the beginning. His only course will be to follow out his original plan by continually propagating from the plants which possess in the highest degree the qualities at which he is aiming. There must be no wavering, not even a shadow of turning. He must be,

"Like unto the Pontic sea,
Whose icy current and compulsive force,
Knows no retiring ebb but keeps right on
To the Propontie and the Hellespont."

The dahlia, the potato, and the Wealthy apple have been developed in this way. The dahlia came from a little, inferior, single flower, found on the plateaus of Mexico, growing wild. The potato was a native weed of Peru, fighting its crowding neighbors for a chance to live, and with its little tuber, rivaling a minie bullet in size, and disgustingly sickish in flavor, gave little promise of the important part it was to play in the world's economy. The apple has come down to us from the wild crab, which even an ostrich would not eat and could not digest.

In these three worthless products of the vegetable kingdom man, with a purpose and an unlimited stock of perseverance, saw his opportunity, and in the process of time—I almost said "in the fullness of time," but the "fullness" has not yet arrived—there came from the magnificent weed one of the most magnificent flowers with which the great world of today is acquainted, from Peru's insipid specimen on the half dozen great agricultural staple which civilization would think it an irreparable loss to cast aside.

From that wild crab has been developed the king of all the fruits of the earth.

What has been done can be done again. If the wild crab can be metamorphized over into a Wealthy apple it does not admit of a doubt that the best apple of the northwest today can be further changed to meet the conditions more fully and to adapt them more completely to their environments, at the same time improving their flavor and their keeping qualities. To do this best in the least time the course to be pursued must be planned with care and judgment. It might be well to select at first eight of the best varieties which are now grown, each one of which excels decidedly in some one quality. Let one be an iron-clad, one very highly-flavored, one a beauty to look at, one a good grower, one a great bearer, one a long keeper, one fine-grained, juicy and free from mealiness, while the last might represent a spreading habit, long life and all that is desirable

in the tree itself. All the chosen varieties should possess as many of good qualities as possible, but be particularly excellent in the one named. When the selection is made by a well selected committee appointed for the purpose, let the experiment stations, amateurs and practical horticulturists and all others who wish to take part begin by crossing each kind with each of the others. This will give 28 combinations, the fruits of each having a different pedigree. As soon as these bloom, let the propagator cross two varieties of the 28, then two more, till he gets to the last. This would reduce the number from which selection would be made to 14. A repetition of this operation would give but seven to propagate from. Continuing along the same line the next time we should have three crosses and one old tree to cross with the best one already found.

Before reaching the point which would require 40 years, or thereabouts, we should obtain some very good apples, and if long keeping has been made a specialty in all the selections, there will, doubtless, be a few good winter apples. Yet it must not be forgotten that we are building for posterity and enjoying the work.

What are the advantages of this method? The great trouble with all seedlings of fruits which, by cultivation, have been raised far above the normal level, is to "breed back" towards the normal condition, getting their distinguishing characteristic from some ancestor or ancestors that stood lower in the scales than the specimen which bore the seed that was planted. Plant a Wealthy seed and try to forecast the future by "guessing" what the fruit will be. The parents will in some way stamp their mark upon the offspring, but the ancestors will have their influence, too, and the four of the second degree will exert as much as the parents themselves. Going back one degree further we find eight ancestors which collectively have as much potentiality as the four in the second degree, each one standing one chance in eight of marking the new seedling with one of its characters. At the tenth remove we find over a thousand ancestors of this degree, and if 999 of them were summer apples and one a long keeper, "breeding back" ten generations would have one chance in a thousand to be a winter apple and then it

would probably be valueless, because so many of its ancestors were acrid, bitter and of no account. In the plan proposed in this paper one more cross would result in a single pair or set of parents, and a seedling from them could not possibly have more than eight ancestors in the sixth generation, all of which would be of a very high order, while one raised in the usual way would have 64. Proceeding four degrees further, by inbreeding from these two and their offspring we shall reach a place where tracing the pedigree of an apple back ten generations we still find but eight individuals of this degree as against 1,024 of the seedlings had been produced in a hap-hazard way or by simply propagating from the best without adopting any method. In the way proposed a seedling can not revert to any one of all its ancestors to the tenth degree without striking a good apple, for it is in the scheme that not only shall the eight original trees be good, but also that one of all the seedlings shall be propagated unless it possesses some great excellency, and no defect so serious as to complete it for the trying situation in which the coming apple is to be placed, because each seedling is liable to revert to any one or more of its ancestors for many generations back, perhaps to the original wild crab, if so it has taken such a number, distinctive marks and character from other predecessors scattered along the whole line of descent that those of the crab are so mixed up and blended with the others, that are not distinguishable. If one particular character is constantly bred for that type will soon be fixed. Suppose that character to be lateness in ripening. Now to this add hardness, and after awhile we shall have a hardy winter apple with the same fixity of type, and so on through the list. This principle incorporated in the plan I have outlined, and if carried far enough will, I think, surely give us the apple we are seeking and when one comes many more will bear it company.

DISCUSSION.

Mr. Toole—I have great faith in the future of seedlings and am proud of what has been done in the hap-hazard way in years

gone by, and if the work can be carried on systematically, we can expect a great deal more from it.

Prof. Taft—I followed Mr. Pendergast very carefully, and it seems to me there is much merit in his plan, so far at least as co-operation goes, because in union, of course, we have increased strength, and then so far as attempting to improve our apples and other varieties of fruit by systematic crossing, I think there is no question about that, and in the selection of varieties I think he has excellent ideas, but I question the advisability of carrying it as far as he recommends. We find that in crossing apples we get the best results where we strive for one thing and hope to strengthen that by devoting our energy towards increasing along one line. Now if we can select as one of the parents a variety that is especially strong in all characteristics with one exception, and then select for the other a variety that is particularly strong in that, it seems to me that we have great hopes of succeeding. But if we carry this farther and bring in other varieties with different characteristics, although they may be desirable, we have so increased the tendency to variation and to strike back, that at the end of the eight or more crosses that were made, I can hardly conceive of anything that would be of as much value as the result of our first cross.

Mr. Pendergast—I think I did not bring that part out as well as I meant to. I did speak of taking hardiness first, and then when I have got that, keep that included all the way down through, but if there are two that are equally hardy I would not throw another one out because it had other good qualities, but first of all would be a winter apple, and with me I should say a winter apple should be very hardy, and then add these other qualities as soon as you can get one that is reasonably satisfactory.

Mr. Kellogg—I really believe that Prof. Taft is right in the crossing of two distinct varieties for two points of excellence that we want to gain. All our seedlings are accidental.

In our Wausau experiment station the best that we have ever done has been done for the state, but what are we doing for the seedling? Nothing in this line of cross-work.

Mr. Blanchard—If there are only two points that they are working for, hardiness and keeping qualities, why, it will sim-

plify matters. In regard to the matter of flavor, I think we cannot have a best apple in that, because you cannot find a dozen men that will agree on that point. If there are only those two points, it would simplify matters to work for those, and as for flavor, I do not see that we can have any one best, or two, or hundred, or thousand, for that matter, because tastes differ.

Prof. Van Deman—It is perhaps true that we will never reach the goal of perfection in even the production of an apple that suits everybody, but if we will follow out the line which has been suggested here by the reader of the paper and by others, we will certainly make great advances.

Mr. Toole—I feel that there are great possibilities that might result from that paper, and yet; if it goes no further than talk, as many things seem to go, if it goes no further what benefit will it be to us. I do not know in what shape to put it. It would be best if the experiment station will do the work, but it is not for us as members of this Society to say what work should be done by the experiment stations.

Mr. Barnes—Our Brother Pendergast has suggested a grand opening; we are all enthusiastic over the subject now, but who is qualified to do the work? My opinion, Mr. President, as a member of this society, is, that we have got a horticultural college, we have got grounds, professors, and the state of Wisconsin has got the money, and I believe, Mr. President, it would be just, proper and wise for this society to petition the legislature, or devise some means whereby we may aid and assist in this matter through our agricultural college. I believe that that is the proper place for this work to be done, and I think a resolution or a request should go from this house today to our legislature that is in session now, petitioning for aid and assistance along this line, and that the work should be carried out through our experimental farm at Madison.

The President—As we have an evening session tonight, it is time that we draw to a close.

The local society here has asked that Mr. A. L. Hatch judge their apples, and that Mr. Irving Smith, of Green Bay, act as judge of the vegetables. If those gentlemen would kindly consent to do so, we would like to have them,

Adjourned until 7:30.

EVENING SESSION.

Tuesday, Feb. 15th.

The President—I do not know as all of us are aware how entirely the good people of Oshkosh have given us the freedom of the city. Not only has this room been placed at our service, but the mayor's office is at our service at any time for any committee meeting that we wish to have there, and the mayor also informs me that he has given orders to the heads of all public institutions in the city to show through those institutions any members of our society who may wish to visit them.

Music.

The President—We have had to change our program somewhat today on account of the inability of some of the persons to get here today, and Miss Jewett will not be here until tomorrow. Mr. Hoxie has kindly consented to read his paper on gardens.

THE GARDEN.

By B. S. Hoxie.

Mr. President and Members: The subject which I have chosen is a broad one, so I shall make no attempt to dig deep in the cultivation art, but simply to *cut* and *cover* as I glance along. I know that great stress has been laid upon the supposed *first garden*, where *the* man and *the* woman roamed in blissful ignorance, not knowing good and evil. History, so far as we have any intelligent record, shows us that humankind first erected places of worship,—dwellings and public buildings,—before any attention was paid to a garden or *the* garden. The term garden as we have it would signify a quiet place, a place of retreat, with shrubs and trees by the side of some lake or river. We are told it was from the ancient Persians that all subsequent nations learned to lay out and care for the garden. So later we

have the account of the hanging gardens of Babylon. The sites or location of these ancient gardens was near some lake or river because of the arid nature of the country, and its general lack of timber, so that in seasons of drouth it could be the more easily watered, and so the garden at Babylon was a wonder, rising in the midst of a plain divided by the Euphrates river and covering an area supposed to be about three acres, laid out in the form of a parallelogram and terraced to its top, until, some tell us, the seventh was reached. The whole structure was supported with huge pillars of masonry, composed of stone and burned brick, and these were filled with earth, while over them were planted the larger trees. Spaces between were arched with burned brick and covered with bitumen to prevent the percolation of water from the soil above. We are told that each terrace was reached by a stair, up which water was carried in buckets by slaves from the river below. From the nature of the trees and plants of Babylon, the sites or location of these ancient gardens were generally near some lake or river. This was necessary because of the arid nature of the country, so that in seasons of drouth they could be more easily watered, and by reason of the general lack of timber they were a more noted feature of the landscape. And, so we can imagine, the hanging gardens at Babylon, located by the river Euphrates—which divided that city—and rising to a great height on its huge pillars, was one of the wonders of the world. This garden was supposed to cover an area of about three acres, with a ground plan forming nearly a square, and rising in a succession of terraces to a great height. The whole structure was supported by pillars of masonry, formed of stone and burned brick filled with earth, and over them were planted the larger trees, so that the roots could have plenty of soil and moisture. The spaces between these were arched with brick and covered with bitumen to prevent the percolation of water from the soil above. We are told that each terrace was reached by a stair, up which water was carried in buckets by slaves from the river below. From the nature of the trees and plants which would grow in that climate we can imagine it to be a delightful place for even a queen whose husband expected his empire was to continue forever. This garden was

supposed to have existed about four thousand years ago, and however much ancient history may make mention of it, or more modern writers may enlarge upon it as one of the seven wonders of the world, not a trace can be found today except in what is assumed to be the foundation walls. We have some accounts of gardens in Egypt and also among the Romans, but no account of any effort to plan or care for a garden until man had built cities and organized a government.

In modern times we find gardens not only on private grounds but public. One of these is located at Versailles, which covers many acres and was established more than two hundred years ago. This garden is or should be the most interesting to Americans who travel abroad, because it contains the greatest number of specimens of American trees of any garden on the continent, and some of these were planted out nearly a hundred years ago, the most of which have established themselves as to the manor born. Taking into account the great variety of trees grown on these grounds, it is one of the most wonderful, and perhaps the most interesting,—if it be considered from that standpoint alone,—as experimental. As this garden is so near to Paris it is visited by thousands of Americans and other foreigners every year. But perhaps the most noted garden of modern times is that at Kew, England, located near Hyde Park on the river Thames. The garden proper covers an area of about seventy-five acres, but, including the pleasure grounds, embraces a tract of over four hundred acres. Fifty acres perhaps is devoted strictly to the botanical garden.

This botanical garden was founded by the mother of George the Third, nearly two hundred years ago, but was not thrown open to the public until the year 1840, and under the care of Sir W. J. Hooker is now considered the best botanical garden in the world. It was this same William J. Hooker who rendered much assistance to Mr. Shaw, of St. Louis, when about to establish the garden which bears his name, and now managed by Dr. William Trelease, a former secretary of this society. Mr. Shaw was a unique character, and after making a fortune in a few years at the hardware business, and having no immediate relatives to inherit this fortune,—himself a bachelor,—determined to leave

some monument to perpetuate his memory in the city of his adoption, and, while visiting the first world's fair in London in 1851, and walking through the grounds at Chatsworth, the idea of a garden forced itself on his thought, and in 1857 he commenced the botanical and pleasure garden now known to all the world. The entire garden embraces an area of 276 acres.

Mr. Shaw was always a lover of plants and flowers, and in his walks outside of business hours in the city, he always visited at looked at some garden. It is said of him that one day while escorting some lady friends, visitors of his garden, and calling all the trees or plants by name, one of them remarked in wonder how he could remember so many names. "Madam," said he, "do you remember the names of all your children? These are my children."

Though the ancients, as I have mentioned, had some skill in planning and caring for gardens, it has only been a few hundred years—perhaps five or six hundred—that any attempt was made at a botanical garden. But now there are hundreds of these, both public and private, where experiments are carried on; where trees, plants and shrubs are collected from every part of the globe, scientifically grouped and arranged, so that in some sense these gardens are an epitome of the world, and the knowledge thus obtained enriches the entire commercial and civilized world of our times, and to all future time.

While horticulture has to do more particularly with individual plants, and all that pertains to propagating, cultivating, fertilizing, collecting and originating new varieties and adapting them to new conditions, the art of gardening means the art or skill required in collecting trees and shrubs and grouping them on the surface of the land to give the most beautiful effects, and we recognize beauty of art and nature thus combined. But the skillful gardener to accomplish this must be an engineer, a botanist and an architect. As a work of art the garden is perishable; it grows old; trees and plants cannot grow in a day, but the garden first possesses beauty in its location and in its plan by the artist, and next year, twenty years, or a hundred perhaps, it may not be old, but without the skill it may be old and perishing in ten years. The artist who works with nature must see

his work from the beginning, and so he must work in harmony with it.

Trees and forest do not constitute a garden, yet the garden can not exist without them, so in planting the garden we must adapt ourself to the location, for what would be possible or proper for Central Park, New York, would be out of place on a level plain like Washington park, Chicago. So you will see that the art of gardening is the art of arranging the surface of the land and water—adapting the given area to the different varieties of trees and plants at our command. Pleasure gardens are generally made up in their plantings of trees and shrubs indigenous to the climate, but often we find varieties far removed from their native habitat to succeed well in our own grounds, as do the American white pines in France. In the grove or garden of Mr. Bryant, of Princeton, Ill., I counted over eighty different varieties of trees, not all natives, however, and in a piece of woods at Junction City, in the western part of Portage county, Wis., I counted fourteen different varieties of trees on a space of less than one acre, saying nothing of the different vegetable forms growing in their shade. If we study the trees in the woods we find them almost akin to human kind.

Some are gregarious, fond of company, and we seldom see them except in a crowd, like the tamaracks and cedars in a swamp, a grove of maples and aspens, or a forest of pines and spruces. But the white oak, yellow birch, linden, the elm and white ash stand out alone, and want plenty of sunlight and fresh air, as much as to say, I can take care of myself; I defy the storm. The old charter oak at Hartford, Conn., was a white oak, several hundred years old, and for many years a landmark for the Indians, and they begged of the early settlers not to cut it down, because they wanted it to stand so that its return to leafage would tell them it was time to plant the corn, and so it became one of our historic trees, but a great wind-storm August 21, 1856, brought it to the ground, venerable with age and historic traditions. (This wooden nutmeg, as a watch charm, is a relic of the tree, and presented to me by a man at the world's fair, whose great uncle once owned the land on which the tree stood.)

Among every genus of trees there are some one species that loves the water, and don't seem to mind if some of their roots are always in it, such as the swamp white oak, the black ash, red maple and water burr oak. Our pines are the oldest representatives of the Devonian age and belong to the carboniferous period, so these are a study of themselves. We see, then, that trees are significant in their nature and habit of growth, and it would be incongruous and entirely out of harmony to mix up such varieties as I have mentioned expecting to improve on nature. The charm of primitive nature is the absence of all art, and in the primitive forest the savage tells us the Great Spirit communes with his children, and our own poet Bryant says—

The groves were God's first temples, ere man learned
To hew the shaft and lay the architecture
And spread the roof above them; ere he framed
The lofty vault, to gather and roll back
The sound of anthems; in the darkling woods,
Amid the cool and silence, he knelt down
And offered to the Mightiest solemn thanks and supplication.

I remember as though it were but yesterday—but nearly forty years ago—one bright June morning when a party of fifteen or twenty of us stood under the shadow of the trees on Goat island, with the heavens above and the thunder and roar of the cataract at our feet below; a hymn was sung and prayers offered. Surely this was the temple of the Most High.

There is nothing more grand to me than the primitive forest, and the great effort now is by many in our county to save some of this primitive forest to future generations. The gardener, to secure this charm of nature, introduces the decorative art, but in such a way as to make it suggestive, and if he has a natural pond or running water all the better, for then he can select a greater variety of trees and plants for harmonious effect and thus add to nature by working in harmony with the surrounding objects. A garden is a place for summer enjoyment, so it must look cool and refreshing, and whether it be laid out for drives or walks it must not be seen all at once like a panorama, but at every step, or every turn in the drive or walk, some new beauty will present itself.

Our own state may be too new, and our wealthy men too much engrossed in adding more wealth to their possessions to pay much attention to decorative gardening, but we have hundreds of lakesides and riversides where, in time, gardens will be planned and thrown open to the public, so, if in this effort of mine I shall in any way quicken the thought to bring about this result then I may plant one impulse for the elevation of mankind, for drunkenness, debauchery and crime has no pleasure in such places as these.

Japan is called the Flowery Kingdom, for not only are its people the most devoted lovers of flowers of any nation on the earth, but they have a peculiar way of making dwarfs or miniature specimens of most every tree, plant and shrub. And it is mostly from them we have learned to shear and prune all varieties of trees to our liking, for I remember quite well when we were told very emphatically never to trim an evergreen of any kind. Perhaps we do not carry the art of pruning—if it may be called an art—so far as they do in tapering work or dwarfing, yet there are some gardens in this country where it is done with very fine effect. One of these is located at Wellesly, Mass. It is situated on a gentle slope on the bank of a small lake, and the grounds admit of terracing in all of its winding walks and drives, and single plants and groups of evergreens are interspersed with beautiful effect and the tapering work is introduced not to make grotesque forms but to make a lovely landscape view from the house to the pavilion and the shore of the lake. The best of this kind of work which I know of in Wisconsin is at Black River Falls in the garden of the late Mr. Spaulding. Some of you here present have perhaps visited those grounds, and I have photographs with me which represent the grounds as they were a few years ago when I was there. It is very doubtful, however, whether this kind of work assists nature or is in harmony with it. At the present time municipal, state, and the national government is more interested in parks than private owners of grounds are in laying out gardens, and every city and village should have more of them, and every farm home should have its bit of wild wood where the wild plants and wild flowers could find a home free from vandalism and cared for by the young or the aged.

In the way of parks or public grounds for the people perhaps the city of Paris stands first. I say Paris, because these grounds are—the most of them are—near enough to be visited by its citizens. These forests and woods embrace all the old hunting grounds of successive kings which now are the property of the state.

Possibly the most noted park in our country is Central Park, New York, which embraces an area of 683 acres, including the city reservoir of 142 acres. The plot of ground is two and one-half miles long by one-half mile wide and the surface is so rough and undulating, with rugged cliffs and huge boulders, that the engineer, gardener and artist have seized upon them for objects of beauty. In the summer season the average attendance is more than one hundred thousand persons in a day. Philadelphia has its Fairmount Park of 2,740 acres. St. Louis has a park of 2,100 acres, and the city of Buffalo a beautiful park of 207 acres. Chicago's park system covers 1,900 acres. While Milwaukee can make no boast of a public park system, yet Forest Home Cemetery, laid out with the skill of an artist and engineer in the person of Mr. James Currie, affords many lessons in landscape as well as decorative gardening.

Perhaps my subject would be incomplete if I did not mention the home garden, but this is not a parallelogram of four rods wide and sixteen long, laid out in straight lines and worked by a horse; for though the horse may take some delight in a parade with gay trappings, I doubt if his aesthetic taste can discriminate between a potato field or a flower garden. Every villager and resident of our suburban towns can have his flower garden, and in addition to this every farmer can have a neat lawn free from pigs and chickens, and a place in the wood lot especially set apart where wild plants and wild woods shrubs can grow unharmed. If this wild corner can be near the highway it will have many admirers besides the owner and his family. This home garden need not be very large, nor the plants and shrubs very costly, and we now have such a variety of blooming plants, or beauty of foliage, perennial, or biennial, that we hardly care to cultivate the annuals. This kind of a garden implies a special permanent location, and if it possesses any beauty in plants or

their arrangement, have it where your neighbors can see it, and even strangers who visit your town may carry away pleasant memories of that visit. Remember there are or may be poor people or unfortunates, who cannot have these things of their own, but they can admire and enjoy your flower garden without loss to you and a real blessing to them. A man said to me once after a delightful morning ride, "Oh, how rich I was this morning in the possession of so much beauty of trees and plants, of fruits and flowers, and it was all mine and none could deprive me of this rich heritage of perfect enjoyment." Have any of you today in mind a home or a village where you would like to live among so many beautiful homes surrounded with such gardens. Men of wealth and leisure who wish to retire from the busy activities of life will buy homes in such a place while they would shun the opposite of this. This, then, is my plea for the garden.

HOW I SAW NIAGARA FALLS FOR TWENTY-FIVE CENTS.

By Mrs. Franklin Johnson.

What connection have the Falls of Niagara with horticulture, do you ask? Well, this is the connection. This summer you will all want to visit the Pan-American Exposition at Buffalo; not far from Buffalo is Niagara, one of the greatest natural wonders in the world,—and I want you to see Niagara.

Most horticulturists belong to that blessed middle class who have "neither poverty or riches." They desire the knowledge and culture which comes of travel, but to gain this they must use their money prudently and count dimes and nickels as well as dollars. It is for the benefit of such that this article is written.

With your permission I will begin with a bit of personal narrative. A few years ago a little five-years-old girl dragged from its hiding place an ancient gay-flowered "carpet-bag," thrust into it her clean little dresses and aprons, donned her Sunday

hat, clasped her doll in her arms and—started for Massachusetts! When her journey was intercepted and she was brought back sorrowful, her heart-broken wail was, “I have *got* to go to Massachusetts; I have *got* to hear the Atlantic ocean roar.” In the course of years the girl became fifteen instead of five and we thought the time had come for her to hear the ocean roar, so she and her mother set off for Massachusetts.

Our tourists’ tickets allowed but one stop-over and that was at Niagara. We did not avail ourselves of this stop-over privilege on our outward journey. Not even Niagara could stay the mother’s eager feet when once they were turned toward friends and kindred after an absence of twenty years.

Oh! the memory of those happy weeks on the rock-bound seacoast and amid the beautiful inland hills! But when at last our faces turned toward the west, our depleted pocketbook led us to conclude that we shouldn’t “have time” to visit Niagara. One among the kinsfolk, suspecting our dilemma, said, “That girl ought not to go home without seeing Niagara Falls. I can tell you how to do it for twenty-five cents apiece.” We followed his directions and now give them to you.

We took a west-bound train over the Wabash route which would reach Niagara City about eight o’clock in the morning. Not wishing to be burdened with our hand-bags and wraps we left those in the care of the station agent at a cost of ten cents. Then following the direction pointed out by the obliging agent we walked a few blocks, perhaps a quarter of a mile, to Prospect Park. Here were in waiting costly carriages and comfortable but unpretentious “vans.” These vans take one to all the points of interest on Goat’s Island and Luna Island. You can go to one point, get out of the carriage and stay as long as you please, then take another van as it passes along, go to another point and remain for awhile, then hail another van, and so on until you have made the rounds, and all this for fifteen cents. The ticket which you buy for the first van is to be retained and used on all, being punched and handed back by each driver.

The route includes magnificent views of the Rapids above the Falls, an unexcelled view of the great American Fall and the Central Fall and a fairly good view of the Horseshoe Fall.

Of course this is not all there is to be seen, but it is as much as one has time for between trains. Our train left about three o'clock in the afternoon, giving us six hours to spend amid the indescribable sublimity of this mighty rush of waters. My daughter, awed into solemn silence for awhile, afterward confessed that it seemed as if the whole Atlantic Ocean had burst loose and was pouring over that abyss.

As we stood on Luna Island on the very brink of the American Fall, the clouds in the heavens opened and the rain poured down. But there was no hurrying and skurrying to seek shelter. Under the fascinating spell of the mighty cataract people gazed and wondered, unmindful of the drenching shower. There were fair, girlish brides in their pretty new traveling dresses. They spread their dainty white parasols in partial protection, but made no move to go. One elderly lady without even a parasol, calmly turned the skirt of her tailor-made gown up over her shoulders and seemed oblivious of all save the tossing of those mad waters.

No language can describe the Falls or the Rapids. No picture, either of pen or pencil, can convey other than the faintest idea of their stupendousness. In the words of Charles Dickens: "I think of it in every quiet season now; still do those waters roll and leap, and roar and tumble, all day long; still are the rainbows spanning them a hundred feet below; still, when the sun is on them do they shine and glow like molten gold; still when the day is gloomy, do they fall like snow, or roll down the rock like dense white smoke. But always does the mighty stream appear to die as it comes down, and always from its unfathomable grave arises the tremendous ghost of spray and mist which is never laid; which has haunted this place with the same dread solemnity since Darkness brooded on the deep, and that first flood before the Deluge—Light—came rushing on creation at the word of God."

The President—We will now have the pleasure of listening to Prof. H. E. Van Deman on the Pan-American Exposition.

Prof. Van Deman—Mr. President, Ladies and Gentlemen: We certainly have had the pleasure of hearing some very lovely things this evening. Niagara Falls is, indeed, an inspiring place. I have often stood there in awe and in rapture, and I hope that you may all stand there and see that wonderful work of Nature. And I have come here to this meeting particularly to talk to you about the Pan-American exposition, which, as you know, is to be held at the city of Buffalo, which is only a few miles from Niagara Falls, is connected by trolley, and while you can not quite see it from Buffalo for 25 cents, you can for 50 cents the round trip from Buffalo to Niagara Falls, and you can see the exposition.

Now I will say that we expect to open that exposition on the first day of May in almost a perfect state of readiness. The buildings are all under way, some of them are completed, the horticultural building, for instance, is practically done, and a great many of the other buildings are very nearly so, and by the time the exposition opens we expect to have it in a better state of readiness than any exposition that ever was held in the world. It will begin, as I said, on the first day of May, and end on the first day of November, covering a full six months.

The grounds are ample; the exposition will cover about 240 acres. The park mentioned by Mr. Hoxie is included within the grounds, and the main part of the exposition buildings will not be within the limits of the park, but in adjacent land, where, as you know, they have to demolish almost everything in the way of trees, and so, instead of putting it on the public parks, which would permanently mar them, they rented additional ground just adjacent to it, and there the buildings are largely put up. The art building is within the limits of the public park and is made of marble and is to be a permanent part of the city hereafter.

Now I have authority to say to you from the exposition management that the horticultural department, as far as space is concerned, is to be entirely free for exhibitors. There will be no charge for space, and we expect to have a very representative ex-

hibit in the way of horticulture. I have charge of the fruit department of the exposition myself, and we are going to do everything that is possible to do to give every one who is growing fruit or interested in fruit culture an opportunity to display what they have, and while we are going to have the United States generally represented, we expect to have foreign countries to some extent. This, as you know, is an American exposition, exclusively American. It does not include Europe nor any other part of the world except the Americas, and all the Americas, I mean North, South and Central and all the adjacent islands, including the West Indies, of course, and Hawaii, the Sandwich Islands, as they have been commonly called, and the government is going to make something of an exhibit of the Philippines, so that we expect to cover about everything from as near to the North Pole as we can get, to as near the South Pole as we can get, and you will see certainly an American exhibit. Every one of the South and Central American republics have already taken steps towards making an exhibit, and there will be a great many of the people from those countries there, and of course the Hawaiians and Porto Ricans, and some of the Filipinos will be there. I suppose they will be loyal Filipinos, I do not know about that, but we do not expect to have any fighting there.

Now we want Wisconsin represented in that building. Of course we have room for you; I want to say that the space is going fast, there are a great many calls for space, but there is room for Wisconsin if she gets there in time, and if you will only make the effort we will certainly do our part towards giving you all the show that we can, and I hope that Wisconsin will be represented.

Now I have been told that there is not sufficient appropriation. I am very sorry to know that that is true. We certainly counted on Wisconsin being represented there, at least as well as she was at Omaha. I had the pleasure of witnessing a part of the exhibits from this state at Omaha, and I was very much pleased and delighted with what I saw there. Of course I have seen your fruits at other expositions, at New Orleans and various other places where you have exhibited them, but I certainly had

hoped that you would make an exhibit at Buffalo, and if there is any possibility of your doing so, I hope that you will without delay make application for space so that you do not come there and find that all the space is taken at the last hour. Even if you are not really sure that you can make an exhibit, apply for space at once, so that you can have a showing. Of course if you do not accept it, we can make use of it, I can assure you of that.

And I want to say about the fruit exhibits, that I am not going to have anything discreditable there. If any state or any county or any society or any private party brings fruit there that is not creditable, we will take it off the tables. We are not going to show anything that is not creditable, and if any one takes space and they do not fill it, we will fill it for them. So that we will expect to show full tables and not empty tables. You know it is very discouraging to a preacher to see empty pews, and we are not going to have any empty pews in the fruit hall at Buffalo if we know ourselves. Some of the states have taken space already to make very extensive exhibits; they are having cold storage yards, some of them have as much as two carloads already, and with the fresh fruit that is coming on, we feel quite certain that we will have a full exhibit.

Now as to the awards and the plan of the exhibits, I will say that there is no reason any individual shall not make a private exhibit if he wishes to do so, and I would suggest that if any one from the state of Wisconsin is going to make an exhibit, that, as I have said before, let this application be made by the officials of this Horticultural Society for space, and the private exhibits can be made upon that space, and while it will go to the credit of the state, the individuality of the exhibit need not be lost. If Mr. Kellogg, for instance, wants to make an exhibit and get an award, why, there is no reason why he should not do so, and yet it redounds to the honor of the state. Or if any county society wishes to do it, or in any way that it can be done in a proper manner, there is no reason why the individual should lose all the honor and the state have it all. Not at all. The state and the individual can both have the honor.

Now the awards are going to be made upon, not a competitive basis, as for instance, if the state of Wisconsin and the state of

Illinois compete for the award, Illinois, for instance, having the greater exhibit, gets all the awards, and Wisconsin gets nothing. It is not to be done in that way at all. It is to be done upon the basis of merit, and any exhibit which is meritorious will receive an award, so far as it is possible to judge, in proportion to the real merit of the exhibit, so that every one who goes there, whether big, little, young or old, from any of the private places, or from the public places, will receive recognition in that fruit show. I think that is as fair as fair can be, and I will assure you that if you will only take the steps now to make an exhibit, and come up there to Buffalo just as soon as you can, if you can not come at the start of the exposition, come when you can, we shall be delighted to see you, and we shall be disappointed if you do not come.

OUR SOCIETY.

T. E. Loope, Eureka, Wis.

In taking this subject I did not for a moment suppose that I was capable of doing it justice or able to cover the topic in the few moments I shall devote to it. If I can touch some keynote which shall help to forward the interests of our organization I shall be more than satisfied. Having an interest in the future and a faith in the usefulness of the Society I may be pardoned in being sanguine in my belief that we are destined to work out greater problems for the good of our great commonwealth than has yet been accomplished, granting at the same time that much has already been done.

We have in our membership many able minds who have given us years of experimentation and research and whose intelligent observation and experience has been given freely to the public. They have helped to demonstrate that we can grow superior fruit, but this fruit belt has been confined to the southern and central portions of our state. We have yet a vast domain to be

opened up horticulturally where conditions are not identical with those sections already developed. Northern Wisconsin is yet in its infancy and is struggling to put off its swaddling clothes to don the garb suitable to its progressive growth. Its horticultural possibilities are yet an unknown quantity. It will look to us for its future in our line of work and will accept with thankfulness and gratitude any way to develop its resources. We must not fail in our mission nor falter in the full and complete performance of our duty towards her. Let our object lessons, or in other words, our trial orchards, be developed in her territory and thus give her the best opportunity possible to grow her own fruit. While doing this we must not forget that all other sections have the right to participate in our endeavors. We must not forget that the whole state should be the subject of our care and benefaction. All that observation and experiment can accomplish should be our aim. We should know no north, no east, no south, no west. Our great state and its welfare should be our care,—our ultimatum. What then will be the duty of the state to us? Manifestly to hold up our hands in the fulfillment of our mission. It should give us adequate means to work with. It should not ask "How much can you manage to get along with?" but it should come to us and say, "How much do you want, we know you will use it intelligently?" With increased responsibility and increased usefulness we should have liberal appropriations.

Many of our members give valuable time and strenuous thought to the problems before us without hope of reward in a financial way and are only enriched with the chiefest wealth, that of doing good to others.

How can we increase our membership? Our membership should be in every city, village and township in the state. Our meetings ought to be like a mass meeting convention. Our excellent magazine, enlarged in matter and scope, should be in every household, and to do this the state should give us enough aid to make it a great power in its line. This would bring to our ranks new and enthusiastic workers and the question of membership be solved.

Our Society is composed largely of thoughtful, earnest men and women. Many are eminent in their line of work and there

are others of us who think we are. Some of us have hobbies and ride them as for our lives. Some are cranks and are bold to say that no wheel of progress turns without a crank, forgetting that wheels in the head don't always have that governing power. Some always believe in saying that a spade is a spade, while others contend that it is a horticultural implement which is used to delve in the superimposed and somewhat homogeneous layer of decayed vegetable mold lying upon or contiguous to the outer crust of our terrestrial sphere. Therein they differ.

Some say that strawberries should be so thoroughly cultivated that no sign of weed should be left, while others endeavor to demonstrate that to succeed best with that luscious fruit it is necessary to shade the tender plants with strong weeds or even grass. Some think an apple tree won't bear fruit without a judicious pruning of the major part of its branches, while others believe in letting nature have full sway even to the sprouts, claiming they protect the trunk from weather or rabbits. Some of us even believe that girdling is conducive to the production of superior fruit, while others say that practice is death to tree and fruit, and prove it by citing us to the work of the rabbit, the original girdler. Minnesota men, please take notice. Some of us can talk all day and yet say nothing, while others say nothing but feel wise.

We are entirely indifferent to the honors or offices of our Society, but if there were as many offices as members we should be happier as a whole. All of us can rise to the occasion but some grasp the occasion with painful regularity.

We are much pleased to have the winter meeting here in Oshkosh, but remembering her reputation we have appointed a special committee to look after some of our older members from the southern and western parts of the state, knowing that having "fun with the boys" is trying to the nervous system. Those further north are posted.

Our Society, may she increase in usefulness and be a factor of great good in the state and promote the happiness and prosperity of our citizens.

Wednesday Morning, Jan. 16, 9:30 A. M.

The President—I suppose the good people of Oshkosh have got a good many of our members, showing them around the city. I suppose they console themselves with the fact that the transactions will be published anyhow and they will read them later, but we have got to take up our program and get through.

The first this morning will be a paper on the subject:

SHALL A FARMER GROW CHERRIES?

Mr. L. G. Kellogg of Ripon, Wis.

Since the program of our meeting was published I have concluded the subject I have chosen is scarcely broad enough so I shall endeavor to present with a limited experience some thoughts upon the cherry as a commercial fruit.

The question of cherry growing has been somewhat neglected or overlooked by this Society, yet I doubt if there is a fruit among the whole list that is more appreciated by the good housewife and family, for canning and preserving purposes, than is the cherry.

There are certain varieties that are practically hardy and congenial in nearly all the well drained prairie and clay soils of the state. It is my experience that when the cherry tree is given intelligent care and management cherries can be successfully grown, and when the trees arrive at a bearing age they will be far more profitable than the ordinary crops we usually grow upon our farms.

The demand for fine cherries is growing rapidly, which is indicated by the prices obtained in the open and local markets the past two seasons. When strawberries were selling in the Minneapolis markets for \$1.00 to \$1.25 per 16-quart case, cherries were in good demand at \$1.50 to \$1.75, and sold readily in the local market at \$1.25. We will admit that you can secure a crop of strawberries the second season from planting, providing, however, the drouth, the winter and spring frosts do not upset your nice laid plans. It will take at least five years from

the planting of cherry trees before we can reasonably expect a paying crop of cherries. However, they often begin bearing in a small way in two or three years. Until the trees come into bearing the land between can be utilized in the growing of other cultivated crops, the margin of profit upon which should pay the entire expense of care and pruning, and the cultivation be a benefit to the growing trees.

For a period covering the years from 1880 to 1890 the small fruit industry was very profitable (especially to the commission merchant), and was placed in the foreground by the institute workers almost to the exclusion of the cherry, plum and apple. With the easy and rapid methods of propagation of small fruit plants, there was an immense planting throughout the state and the close competition in the markets brought the price of berries below the actual cost of production and marketing. This no doubt was a blessing in disguise, for the reason that many of the wage earners and their families in the larger cities were enabled to enjoy fruit upon their tables, at least a small portion of the year. I have no desire whatever to discourage the planting of small fruits, but think there is a broader field for education among the larger fruits. We have graduated as it were, in the preparatory course, or the production of small fruits, and we are now ready to enter upon the study of the more intricate problems of the production of the cherry, plum and apple.

Let us consider for a moment the different methods of the propagation of the cherry. There are three methods by which the cherry may be propagated. First, by suckers or sprouts. These sprouts are permitted to grow two or three years, are then dug and transplanted as individual trees. These are the trees which furnished the cherries for the early settlers of Wisconsin, or until the advent of the Early Richmond and other varieties grafted or budded upon the Mahaleb or non-sprouting root. Thirty years ago these old Morello trees produced some fine crops of cherries. From the continued transplanting from these cherry thickets and the tendency to degenerate, I have observed that the majority of these trees now produce only a few worthless, wormy cherries. I would discourage the planting of trees propagated in these cherry thickets and consider them entirely

worthless as compared with the newer varieties propagated upon the non-sprouting roots.

The second method by which the cherry may be propagated is by grafting, a method which is employed very seldom by nurserymen.

The third method, or the one by which a very large percentage of our commercial cherry trees are propagated, is by budding upon the non-sprouting Mazzard or Mahaleb seedling stocks. These seedling stocks are grown from pits one year in France and imported into the United States. The nurserymen will transplant or line out the seedlings, grow them until the month of July or August, insert a bud of the variety he desires to propagate, and cultivate, prune, and care for them two years longer before they become merchantable trees. Thus it requires four long years to produce a merchantable cherry tree from the pit. These trees are designated in the catalogues and known in the market as 2-year, No. 1, 2-year No. 2, etc., for the reason that they are usually grown two years after the bud is inserted. These are the trees I would recommend for general planting upon all of the well drained prairie and clay soils of our state.

It is unnecessary to go into the details of planting, as the same general rules will apply to the cherry as to the apple or plum. However, there is one point I will allude to and that is "plant deep." The holes to receive the tree should be not less than twenty inches deep. I believe thousands of trees die annually on account of too shallow and careless planting. When planting a cherry tree cut the top back at least one-half, to mere stubs or spurs. This will nearly or quite insure the life of the tree and cause a good growth the first season.

If given good cultivation the cherry tree upon the Mahaleb root is a vigorous and rampant grower and should receive a severe pruning or thinning of the top for four or five years after planting, or until the tree comes into full bearing, after which it will need but very little pruning. Prune with the one idea, "a well balanced, open, symmetrical top."

For a succession of cherries for four or five weeks I would recommend the planting of Early Richmond, Montmorency and Ostheim. There are many other varieties, some of them good

and many of them worthless. I would call your attention to the Russian varieties of the cherry which were introduced from Russia by Prof. Budd a number of years ago. While the Russian varieties may have proved productive and successful in Iowa, they have, with the exception of two or three varieties, proved a failure in Wisconsin, on account of the flower buds being too tender to withstand our severe winters.

There are miles of roadside that could be utilized by the farmers of Wisconsin in the planting of cherry trees which would not only furnish an abundance of delicious cherries for the family but become a source of revenue and add value to the farm. Frequently the village or city lot could be made more attractive by the planting of a hedge-row or individual cherry trees for the purpose of hiding or screening some unsightly building. In fact what is more beautiful, as well as useful, in its season in furnishing healthful fruit for the sustenance of the human family than a cherry tree loaded with large, red, ripe cherries? Plant cherries!

DISCUSSION.

Mr. Barnes—I would like to call attention to the fact that Mr. Kellogg recommends the Montmorency. There are two varieties of Montmorency, there is a Montmorency Ordinaire and a Large Montmorency. You will find the Large Montmorency the best,—the largest cherry and the best and hardiest tree by a considerable difference.

Mr. Toole—Are there really two varieties of Montmorency, or are there some people who do not know which are the Montmorency, and are getting out their own thing?

Mr. Kellogg—There are more than two varieties of the Montmorency, but I am unable to name them at present. As Mr. Barnes says, there is the Large Montmorency and the Montmorency Ordinaire, and there are one or two other varieties under the same head, but the one that is propagated at present by nearly all the nurserymen is the Large Montmorency. The Montmorency Ordinaire, as I understand it, has been discarded.

Mr. Barnes—This question of the two varieties of Montmorency cherries was thoroughly discussed at the meeting of the American Association of Nurserymen at Chicago last year, and it was the concensus of opinion of every nurseryman there that in their experience the Large Montmorency was the right tree, and I hope the people here will impress that upon their minds and be persistent that they get the large Montmorency.

Prof. Van Deman—This is just exactly in line with what everybody says about the Montmorency cherry. They are confused in such a degree that it is impossible to disentangle the nomenclature. Now the original Montmorency, large fruit, that was first introduced from France, has entirely dropped out. I do not think it is grown by any nurseryman at all. But the one that came as the Montmorency Ordinaire is the one which they now call the Large Montmorency, and then there are some other Montmorencies, as Mr. Kellogg has said, and the one which the nurserymen are now propagating as the Large Montmorency is the one which came over originally as the Montmorency Ordinaire, and is the best one of the lot, and it is quite as hardy as any of the ordinary sour cherries.

Mr. Edwards—I would like to ask Mr. Kellogg which he considers the best, the Mahaleb or the Mazzard stock?

Mr. L. G. Kellogg—That is a question which more properly affects the nurseryman than it does the planter of the tree. It is a question I am unable to answer, but I am informed that the Mahaleb is used almost to the exclusion of the Mazzard for the grafting of the cherry; it is considered the stronger grower.

Mr. Barnes—For the sour cherry?

Mr. Kellogg—Yes, for the sour cherry.

Mr. Barnes—Not for the sweet?

Mr. Kellogg—No.

Mr. Bradt—We have in our section quite a number of what is called the Late Richmond. It strikes me that is not the proper name. It is very hardy with us, is late, and I would like to ask Mr. Kellogg if he knows any cherry by that name, and if that is not the proper name, what is?

Mr. Kellogg—About eight years ago I purchased a dozen trees, which I ordered under the name of Late Richmond. They

were rank growers, but very unfruitful. They have not produced on an average since they came into bearing, two quarts per tree each year. If I received the correct Late Richmond I can not recommend planting them.

Mr. Bradt—You do not know of any other name for them?

Mr. Kellogg—I do not. The tree is an unright grower, and a rank grower, but produces few cherries,—large, dark cherries.

Mr. Bradt—What kind of soil is it used on?

Mr. Kellogg—Black soil; prairie soil.

Mr. G. J. Kellogg—Is the color like that of the Morello?

Mr. L. G. Kellogg—Not as dark as the Morello.

Mr. Bradt—I have what we call the Late Richmond which is identical with the Early Richmond in every way, only about two weeks later, and it is a better bearer and the fruit less wormy, and it seems to be a very profitable, heavy yielding cherry, and a good cherry. It is the second best cherry I have ever grown in Wisconsin, next to the one Montmorency in size.

Mr. Pendergast—I want to ask Mr. Kellogg, or any one that knows, whether the wild red cherry will answer for stock to bud these other varieties on? I have heard it said,—some say they have tried it,—that it will answer, but that the choke cherry and the black cherry will not answer, but that the wild red cherry will, and I would like to know about that, because there are thousands of them that can be found in some parts of the state; it would be the easiest way to get some.

Mr. Kellogg—I have had no experience in budding upon the wild red cherry; Mr. President, there may be others.

Prof. Goff—I have had no experience. The experiment has been tried more extensively in Iowa, and I understand the results seem to be favorable, but it is still in the experimental stage, I understand.

Prof. Van Deman—I tried it in northern Michigan back in the sixties, and I found it was a failure. The common fire cherry is the common name of the red wild cherry. Now it will grow for a time, I have had that start and make a good growth for a year, but they soon break off, so in the end you will have a failure. Now the choke cherry will unite better and last longer, but it is a slow growing thing that breaks off and it fails,

so that neither of those cherries are worth anything as stock. It would be indeed a fortunate thing if we could get one of our wild rapid growing cherry trees which would make a good stock, but we can not get it.

Mr. Hatch—Why would it not be common sense to take the pits of the cherries that we do grow? Suppose we call them root grafts and put the union below the surface of the ground? Why not have the same method that we have in setting apple trees?

Prof. Van Deman—They would send out their own roots; they would sprout, that would be all.

Mr. Hatch—Is that a real trouble, with proper cultivation?

Prof. Van Deman—Yes, or no cultivation.

Mr. Hatch—Now I have grown trees of the Kentish right from the root sprouts, and that has been objected to, but with proper cultivation and management it did not worry me a bit. I got the cherries, I did not worry about the sprouts, because I can sell the cherries for money. Now those propagated from sprouts need not worry any good cultivator, he need not fear the sprouting of the roots. Is it not that tendency to grow that we are after? If we are going to have stock at all, why not have the energy and push, and not one of those things too weak to get out of the ground. And then cultivate as you want to. There is nothing will respond more quickly and kindly to good cultivation as the cherry.

Now I dote on professors, but sometimes they miss the mark as well as the rest. Is it not a fact that this very energy that sends out the sprouts is exactly what you want, and if it is, you ought to be ashamed to have abused it. I want that tendency, I want that push, and I can not see why the stocks grown from seeds of the varieties that you want to propagate are not useful.

Mr. Blanchard—In Calumet county, take it on the Indian reservations, there are two varieties of cherries, a black and a red, and I expect the nurserymen would call them wild cherries, but they will grow in spite of anybody and without any cultivation and they will sprout and sprout and will grow without any care, and they have been there 45 years, and they will be loaded with cherries that are very good. Now then, there are nursery-

men that will sell cherry trees propagated in the nursery, but we can not get cherries to eat from them; I do not know why, but we say they are not native cherries. I wish somebody would tell us what they are. They are neither black nor red, and they will grow in spite of everything, without cultivation, and of course this sprouting tendency is what has kept them going. I expect it is untechnical to the nurseryman, this propagating business, it might cut the trade off for them. I wish if there is any name for them, somebody would tell us what they are.

Mr. Kellogg—The cherry he refers to is the red English Morello, that is, the red one, and the black one is the old,—well, seventy years ago they called it the Black Morello. That old time cherry is a success in Jefferson county; bears bushels and bushels and wagon loads of fruit.

Mr. Toole—I notice incidentally a mention that some varieties are not so subject to be wormy as others. What can we do to prevent having wormy cherries.

Mr. Kellogg—We have never had any wormy cherries among the trees that were given good care and cultivation. The wormy cherries were produced from the old Morello trees that were planted for years and taken from the plum thicket and anywhere; they degenerated and produced wormy, poor cherries.

A Member—I would like to ask Mr. Kellogg what he thinks of the Windsor cherry?

Mr. Kellogg—It is a fine cherry if grown in Michigan, but it is very seldom that we can get a crop of the sweet cherries in Wisconsin. It is not safe to plant that class of cherries in Wisconsin.

Mr. Toole—In regard to the varieties, there is not a wide range, there are only three varieties to choose from. I did not catch from the paper anything in regard to the Russian varieties, but I have had the impression from the Experiment Station that there are one or two varieties that ought to be added to our list. Perhaps Prof. Goff can tell us something in regard to the Russian varieties, if there is not something that we can count on.

Mr. Pendergast—I got quite a number of those Russians from Prof. Budd, and they have grown well, they are thrifty

and very hardy and beautiful trees to look at, but they never bear, I never got over half a dozen off the trees in my life. They are very scattering, here and there one, and the birds are ready to take every one.

Prof. Goff—I have a number of Russian varieties that we planted; we have found three of them that have some promise,—the Ostiem, Kings and a variety named the late Morello. I wrote Prof. Budd twice in regard to that, although it has an English name, it is a Russian cherry. There are a number of other varieties, something over a dozen that have almost all failed. Some have been winter-killed and others are worthless, might as well be winter-killed. The trees have all grown finely and the fruit is generally pretty good in quality, but there are only these three that are worth keeping.

A Member—I would like to ask Prof. Goff what he thinks of the Wragg cherry?

Prof. Goff—We have grown the Wragg cherry to some extent. It is a large cherry, but quite poor in quality. I think it is quite productive. We have not fruited it in Madison, but I know that Mr. Hatch has grown it, and I have learned something of it from his place.

Prof. Van Deman—Do you consider that identical with the East Morello?

Prof. Goff—I never had supposed it could be identical. I do not think it is identical; it is different in flavor.

Prof. Van Deman—It is generally considered the same.

Mr. Hatch—This paper was written by my assistant, Mr. Cranefield, at my request. I can subscribe to most of his statements, and I will add a little to what he says, in some cases.

NATIVE PLUMS AT THE EXPERIMENT STATION.

Frederic Cranefield.

The plum orchard at the Experiment Station now contains about 1,400 native plum trees. In addition to these we have nearly 1,000 trees from one to three years old in the nursery, many of which will be planted in permanent orchard rows next spring. Of the total number about 250 are named varieties and the remainder seedlings; of the named varieties 200 bore last year.

The best of the varieties, that bore for the first time last year, are Brittlewood, Bomberger, Etta, Freeman, Poole's Pride and De Soto and Japan Cross Number Four.

BRITTLEWOOD—A very large plum of excellent quality of the Americana species; skin only moderately thick; flesh tender and juicy; stone small and nearly free. From Theo. Williams, Nebraska.

BOMBERGER—Large, oblong, slightly tinged with purple on yellow ground; skin thin, tender and not at all harsh; flesh tender, sweet and rich; above the average in size and quality.

ETTA—Large, nearly round, yellow, striped and splashed with pale red; flesh sweet and rich. A single small graft of one year's growth is the only specimen in the orchard and it is hardly fair to form conclusions from this, but the fruit borne was very fine, attractive in appearance and high in quality.

FREEMAN—Very bright shining red; no bloom; skin thin and tender; flesh crisp, juicy, with a delightful aromatic flavor entirely unlike any other plum tested. This may not prove a valuable market sort but is very striking in appearance and has a very remarkable flavor.

POOLE'S PRIDE—A very good plum of the *Hortulana* type; better than Wild Goose or Pottawatamie; medium to large; skin thin and tender; flesh firm, sweet and rich.

The last one of the list we are obliged to record as De Soto and Japan Cross No. 4, as it was received from Prof. Budd with no other title. This is a cross between De Soto and an unknown

Japan variety. Large to very large, oblong, slightly pointed; resembles Abundance in shape and markings; skin thick but tender; flesh orange-colored, crisp, tender, juicy and rich, with a decided "Japan" flavor; freestone. Tree a poor grower, weak and drooping.

Many other varieties, fruiting for the first time, were also good, but these are the ones that attracted most attention.

Among the older varieties, those that have borne two years or more, we note the following as especially good plums; they are named in alphabetical order:

Aitkin, De Soto, Hammer, Piper, Quaker, Springer, Surprise and Wyant.

The Aitkin is only medium in quality and a poor keeper, but is valuable as an early variety.

Hammer is very productive and appears to be an annual bearer.

Springer is one of the best mid-season plums in our collection.

Surprise is worthy of all the praise that it has received in regard to quality. Our single tree bore a good crop in 1899 and none the past season.

Wyant must still be placed at the head of the list as the best native plum in our collection, hardiness, productiveness and quality all considered.

Other prominent varieties are American Eagle and Hawkeye, both very large, but poor in quality and decidedly unattractive when fully ripe, assuming a dull purplish color.

Cheney has proved irregular in bearing. Unless well thinned, it gives a full crop only about every third year and then overbears.

Barnsback is above the average in quality and a perfect freestone.

North Star closely resembles Surprise in all respects, in fact, about the only point of difference is in the shape of the pit.

The varieties that might well be dropped as too small and inferior to be of much value are: City, Deep Creek, Honey, Homestead, Old Gold, Peach and Spear.

The fruiting season of the native plums extends over a period of three months. The Aitkin, Cheney and Le Duc were the

earliest, followed by the majority of the varieties mentioned as well as many others classed as mid-season plums. The Wyant follows these and lasts until the late varieties of the Miner type come in, such as California, Champion, Decker's Seedling, Rose A., etc.

Probably the most valuable lesson taught by the variety test is this fact, viz.: that every collection should contain a number of late varieties of this type.

Long after the Americanas and Chickasaws were gone, the orchard was still reddened by the scattering trees of the varieties named. Later still than these to fruit were several trees of unknown origin, probably Miner seedlings, which bore large quantities of small, bright red, shining fruits in the greatest abundance, that remained on the trees until heavy frost and after being picked they remained in good condition for several weeks. While the behavior of the named varieties has been a matter of great interest, the study of the seedlings has been intensely interesting and profitable work. Plums have been found in the seedling orchard excelling in many points any named variety in our collection. The most surprising fact in connection with the seedlings is the fact that the majority are good plums, many being as good as the parents and a very considerable number are better in some respects than the parent varieties. In this connection the seed-bearing parent is meant, as all are undoubtedly crosses, the lack of self-fertility in the native plums having been quite fully demonstrated.

Many of the seedlings showed strong evidence of a Japan cross, in fact the best seedlings were Americana varieties with Abundance or Burbank markings. It would be unwise however to lay great stress on this, as further developments may necessitate a revision of opinion.

The orchards are mainly located on land that had been infested, for an indefinite period, with quack grass. The extermination of this has proved one of the most difficult problems that we have been called on to solve. Partly on account of this pest and partly from experiments in other directions the main part of the orchard has been repeatedly and heavily mulched with marsh hay. There is no doubt as to the value of this method

of culture, the mulched trees having made a remarkable growth of wood, as well as producing enormous crops of plums of excellent quality, while the trees not mulched made but little growth and the plums borne were small and lacking in juiciness. The high degree of culture induced by this method possibly accounts in a measure for the excellent showing of the seedling orchard. It is probable that the experiment of mulching will be extended to include the entire plantation. The main objection to this plan is the danger from fire in dry weather. Four rows, 72 trees, of the new commercial orchard were destroyed by fire last summer and it was only by heroic efforts that the remainder were saved.

One of the faults of the native plums is the tendency of most varieties to overbear. In order to have fruit of good size and quality it is usually necessary to thin the fruit. During the second week in July the fruit was thinned on all trees that appeared to be overbearing. At this time the plums were more than one-half grown and the work could probably have been done earlier with great profit. It is better, however, to thin late than not to thin at all. Of two trees of Hammer that were overlooked at the first thinning and were breaking down with fruit, one was thinned Sept. 1st, after the fruit had begun to color; on Sept. 15th a marked difference could be noted in the size of the plums in favor of the thinned fruits. The plums that were pulled off ripened on the ground and were salable as "seconds."

The earlier plums were marketed in berry boxes and the later in baskets holding one-sixth of a bushel. The berry boxes will probably be discarded in future in favor of the baskets. Only very choice plums suitable for dessert use can be sold in the boxes for large enough a price to be profitable. The bulk of the crop was sold at \$1.50 per bushel, wholesale prices, or 25c per basket. These sold at retail for 35c and 40c per basket. The price might probably have been \$2.00 per bushel, as the demand far exceeded the supply at all times. Early plums have not been in as great demand as the mid-season and late plums.

Experiment Station, Madison, Wis.

Prof. Goff—The Brittlewood is the largest in size of any native plum that we have grown. This last season we exhibited it in connection with other varieties at the state fair, and there were a large number of the varieties of Japanese and a considerable number of the European plums, and there was nothing on the tables as large in size as the Brittlewood. In quality it would rank among the best of the Americanas; it is one of the best; it will be put in the first grade as to quality. In regard to productiveness I can not say. It has only borne fruit one year, but the crop was very large; we had to brace the trees.

The difficulty with the Poole's Pride is that the flower buds are not hardy and we can only grow a crop about once in three years.

It is a very interesting fact that the Japanese plums cross freely with some of the native plums, and some of our most promising seedlings have come from this crossing.

In regard to the Springer plum, this is a seedling that the late Mr. Springer, well known to most all of us, sent to our station way back in 1890. We have been fruiting it and have not reported upon it much, because we knew that the plum was not grown elsewhere and we did not want to be responsible for praising a variety that might afterwards turn out worthless, as so many have done, and with us it has borne almost every year, if not every year since, and the fruit has been increasing in favor with us. This last year we thinned the fruit systematically, and we find it rises to the front as one of our best Americana plums. We shall plant it ourselves in what we call our commercial orchard, and we shall propagate it somewhat, and we will probably have some trees for distribution.

Mr. Barnes—Do you know the origin of the tree?

Prof. Goff—I do not know except that Mr. Springer found it wild somewheres in his vicinity. I do not know that he ever sent it anywhere else, but he said it was the best he had ever seen. He did not name it; we named it for him, so far as it has a name.

Surprise.—The only question in regard to the Surprise is whether or not it is productive. Our single tree bore a good crop in '99, and did not bear the last year, so that our experience

does not go far. I am informed by Mr. Lord and others that it is productive. If that is true, then we have a most valuable plum in the Surprise. The strong point is its fine quality. I think it has been generally pronounced the best in quality of the Americana plums that we have thus far grown, although there is a question as to whether it is really Americana or not.

Wyant.—The Wyant is a plum that can be classed something as the Duchess is classed among the apples,—a reliable plum, not first quality, but good quality and salable, large size, generally satisfactory except in the matter of quality. We have better plums in quality, but in other respects we could hardly improve on the Wyant as to its general use.

I want to interpolate a little here by calling attention to the fact that among our Americana plums we have specimen varieties that seem to have all the favorable qualities that we have found in all other plums, for instance, we find that we have Americana plums that have thin skins,—the average Americana plum is thick skinned. We have those that are perfect freestone and we have them very fine in quality, so I do not see why we have not a basis for Americana plums, as well as European plums or any other plums. Further, we can cross them freely with Japanese plums, and also cross them freely with the Chickasaw stocks, and some of these crosses produce our very choicest quality, so that I believe we have here a field for work that is very promising, indeed.

I will say in regard to the late varieties, that with us they have not proved very productive. This last season every Miner plum in our part of the state bore heavily, and everything that resembled a Miner bore very well, but they do not always bear, by any means; with us the Miner, in fact, is one of our least available ones.

A Member—How long a period does the plum season last?

Prof. Goff—They begin with us about the first of August and last until October, in fact, there were plums this year beyond the middle of October that we picked, and I believe we marketed some of them as late as the middle of October.

We have noticed frequently in our Americana plums after we commenced to pick the crop,—they do not ripen all at once, we

pick them as they ripen, and we find that the picking off of the first plums evidently helps the size of the later ones, so that they grow larger than the earlier ones. I mention this to show that even late thinning is efficient. Of course early thinning would be preferable to late thinning.

For a considerable portion of the crop we received 30 cents a basket from the stores in Madison.

I will add that so far as the marketing of our plums is concerned, it has been a surprise to us all,—that is, the freedom with which they were purchased. A single party ordered six bushels of native plums for his own use. He was a hotel keeper in Madison, and we have had no trouble at all in getting the price I have mentioned. The only reason that we did not get more was that we opened the market ourselves at that price, and we did not quite want to raise the prices on account of the fact that they came from the Experiment Station; we did not wish to try too much competition in the market, but we might undoubtedly have secured more for some of them at least than we did secure.

Mr. Kellogg—What can you say of the Burbank?

Prof. Goff—The Burbank with us is just about as hardy as the Lombard, just about as reliable for bearing. It bears heavier than the Lombard when it bears, but I do not regard it much harder in the flower bud or any other respect than the Lombard.

Mr. L. G. Kellogg—I would like to ask how Prof. Goff would control the plum pocket. He spoke of being able to control it.

Prof. Goff—The experiments that have recently been made by the department of horticulture show that the peach leaf curl, which is botanically closely allied to the plum pocket, can be controlled almost perfectly by spraying with Bordeaux mixture. I believe they spray twice, once early and once later, and while I have not made the test with the plum pocket, because we have never had enough of it yet to need it, I believe from the fact that the two are so closely allied that one will be susceptible to the same treatment as the other. However, as I say, I have not proved this by experiment.

Mr. Barnes—Do you consider the Aitkin a free stone plum.

Prof. Goff—Not a strictly free stone plum, no, sir.

Mr. Barnes—Practically so, if it is not strictly so?

Prof. Goff—The stone is not nearly so adhesive to the flesh as in some other varieties; it is not nearly so free-stone as some others.

A Member—Is there any means of preventing their rotting on the tree?

Prof. Goff—That is another interesting matter. We lost a good many plums this last year by rotting. I have great hope from the Bordeaux mixture in that respect, and we hope to spray hereafter regularly with the Bordeaux mixture.

Same Member—I have sprayed twice, and still they rot badly on the trees.

Prof. Goff—I notice the experience of the Georgia Experiment Station goes to show that the Bordeaux mixture, when properly used, is nearly a preventive of that disease, but we are only hoping for that.

Mr. Marshall—I sprayed my trees with the Bordeaux mixture three times, twice with the arsenic mixed with it, and the Rockford and Forest Garden rotted almost entirely on the trees in spite of that.

Prof. Goff—What time did you spray?

Mr. Marshall—Well, at the same time I was spraying my apple trees; I can not give you the exact date.

Mr. Barnes—Were not the trees overloaded with fruit?

Mr. Marshall—No, I do not think they were.

Mr. Hatch—Before you proceed further with this discussion, I wish to announce that we have with us two distinguished gentlemen from our sister state, President Kellogg of the Michigan Horticultural Society, President Green, from Illinois Horticultural College. I move that these gentlemen be elected honorary members of our Society, and be invited to participate in this discussion. (Carried.)

Mr. Hatch—We have also three representatives from agricultural papers. It has been our usual custom to extend to them an honorary membership, and I move that Mr. Thurston, of the Farmer's Review, Mr. Corse, of the Wisconsin Agriculturist, and Mr. Jones, of the Fruit and Vegetable Journal, be made

honorary members of our Society and invited to participate in the discussions. (Carried.)

Mr. Marshall—If we have time, I would like to hear from Prof. Taft or Prof. Green in regard to this rotting of plums on trees, if they have any remedy they could suggest.

Prof. Taft—Mr. President, over in Michigan they call me a kind of spraying crank, and I prescribe Bordeaux mixture for nearly all the ills of our plants. When it comes to the brown rot of our plum and cherry, I can not recommend it as a sure remedy. I think it best to spray the trees before they blossom, and once or twice after that, but as a rule the plums are attacked when they are two-thirds or more grown, and we seem to have lost the effect of the early spraying. I hardly like to apply Bordeaux mixture after they begin to color, and have used in its place a weak solution of copper sulphate. This is quite effective, but I have not been able, in seasons like the last, to save our fruit entirely from the rot. I have found that thinning a fruit had very good effect. It lessens the strain upon the trees and in that way is a benefit, and, more than that, the plums being separated, will be far less inclined to the rot. You are well aware that if two or more are in contact, those are the ones usually attacked, and if one is attacked it generally spreads to the others, so that the thinning in these two ways has helped us, and by thinning and spraying we are able, in ordinary seasons, to save practically all our fruit. Last year it did not succeed as well. The late spraying, however, can not be neglected when we have warm rains in July. This trouble being most severe in wet seasons, is naturally difficult to control by spraying, because we can not very well spray when it is raining, and if the showers come upon it afterwards, of course we have lost the effect of the spraying.

Regarding the plum pocket which was mentioned, I would say that, as with leaf curl, we have found spraying quite effective, but I want to speak of one point that it seems to me was not brought out clearly enough. In the bulletin of Prof. Pierce from Washington, he recommends spraying before the buds start. If he can spray three or five weeks before the buds start, or before the blossoms open, we have almost complete immunity

from that disease. If the buds are thoroughly sprayed, then we should not have a curled leaf on the trees, but if we wait until a week or ten days before the buds open, we lose the greater part of the effect. We can prevent perhaps half of the curl, but do not get nearly as complete result as if we sprayed three or four weeks before that time.

Mr. Hatch—The curl and the plum pockets come from the same difficulty?

Prof. Taft—It is very much the same, yes.

Mr. Kellogg—I had quite a large plum orchard, and in thinning the plums I cautioned the men and was always careful myself to take my thumb and finger to pull them off separately. I have seen men mash those rotten plums in their hands and then reach right over other plums in the same quest, and spread that rotted stuff all over the healthy plum. That is where you make a greater mistake than in any other one thing. In thinning plums, take your thumb and finger and pull it out and do not touch any healthy plums with this stuff on your fingers.

Mr. Blanchard—I would like to ask Prof. Goff whether he would recommend spraying fruit trees when they are in full bloom?

Prof. Goff—No, sir, I would not. It is not the best time to spray, as a rule, for the trees, and it certainly is not a good time to spray for the bees, therefore I would recommend doing it either before or after, generally both before and after.

Mr. Kellogg—I believe it is a settled fact that certain varieties of plum are more susceptible to the rot than others, and I think it would be a good plan to discourage the planting of these varieties, such as the Hawkeye.

Mr. Hatch—That is also true of the plum pocket. Cheney especially is inclined to plum pocket, and the Weaver.

Mr. Kellogg—I made a mis-statement; it was the Rockford instead of the Hawkeye.

Prof. Goff—The Hawkeye rots quite badly with us.

Mr. Toole—I would like to ask how many seedlings did the Professor have fruit the last year, and what proportion of them he considered worthy of further notice?

Prof. Goff—I can not give you the exact number. The num-

ber that fruited was large, I should say it was nearly 500, and, as Mr. Cranefield remarked in the paper, the average quality of these seedling plums was good, and yet there are perhaps not more than a dozen trees in the whole lot that I would be willing to say was really better than what we have in our orchard already. It is quite likely that we shall have to reduce that number, but there are some seedlings there that we think a great deal of, and we are going to guard them jealously until we know more of them.

I want to add in relation to the rot, that there is a difference in the susceptibility of trees to rot, and in some cases one tree would have the crop totally ruined by rot, so that they would all drop off before any of them ripened, and perhaps the trees on either side of it were not at all affected. To me this suggested very strongly the fact that it is largely a constitutional trouble and that it can probably be stamped out by rejecting thoroughly all varieties that are subject to it.

Mr. Barnes—If I am not mistaken I understood Prof. Goff to say that he doubted somewhat that the Surprise plum was an American seedling, did I not?

Prof. Goff—I said I was somewhat in doubt as to its being a pure Americana parentage, by that I mean that I am not sure that it is simply *prunus Americana*, and I do not know but that it may be mixed somewhat with the Chickasaw. It is an American plum, it is not a European or Japanese plum, there is no question on that point.

Prof. Taft then read the following paper on "Renovating Old Orchards."

RENOVATING OLD ORCHARDS.

By L. R. Taft, Agricultural College, Mich.

In the days when the country was new, one had but to tickle the soil to grow good crops, and this was as true with the fruits as with the cereals and other farm crops, but, as the orchards reached the age when they should give the best returns, it has

been the common report that they have become unproductive. This has been especially true of the apple and, as this fruit is found to a greater or less extent upon nearly all farms, there has been a general call for information regarding the cause of the trouble, and a remedy.

As the trees are growing under a great variety of conditions, so far as climate, soil, location and care are concerned, it would be naturally incorrect to ascribe the failures in recent years to any one cause, or to recommend the same remedial treatment for all cases. Nearly all of our fruits do well on a moderately heavy loam soil, although the pear and plum seem to prefer a somewhat stronger soil, and the cherry and peach a lighter soil than the apple, but we find many orchards seemingly planted without any regard to the adaptation of the soil to the trees. This may in a measure be excusable in the case of a general farmer who wishes to grow a few trees to supply fruit for his own use, and who selects the best soil that he has for the purpose, as it is not wise to discourage the attempt, but the man who is about to engage in the growing of fruit as a commercial venture, can not be too careful regarding the nature of the soil upon which he is to plant a new, or to renovate an old orchard. However well the trees may be cared for otherwise, the best of success can not be expected if the soil is so light and devoid of humus that it will not furnish moisture in time of drought, as such a soil will neither supply plant food nor hold that which may be applied for the use of the trees. On the other hand, the returns will be equally unsatisfactory if the trees are upon soil that is unduly heavy or wet. The stiff clay soils are not the best orchard soils, as it is practically impossible to so handle them that they will not bake and suffer in time of drought. A wet soil is even more objectionable, as none of our tree fruits do well when they have wet feet. The difficulty can be to a certain extent lessened by draining the land, but this alternative should be avoided if possible.

Among other conditions that may be present are worthless or undesirable varieties, destructive diseases or dangerous insects, "hide-bound," or sun-burned trunks and branches, and the result of the injudicious use of the saw and axe.

Before deciding upon any method of renovation, the orchard should be carefully examined and the extent to which the above-mentioned and other unfavorable conditions exist determined in order to learn if the probable returns will warrant the attempt to renovate the trees.

Having determined upon the renovation of the orchard, its needs should be studied and a course of treatment mapped out. Although all orchards have not been neglected to an equal degree, there are few where the treatment should not be along at least four lines, viz.: cultivation, manuring, pruning and spraying.

A majority of the old orchards, and this is particularly true of apple orchards, are in sod, or, as might more accurately describe them, they are "hay orchards," and as we are told by physicists that no two bodies can occupy the same space at the same time, so it is as a general rule true that the best results can not be secured in an orchard when an attempt is made to grow some other crop. It must be said, of course, that here and there a soil will be found that is sufficiently rich and moist to grow fruit of good quality, even though covered with a sod. This is not the case with a great majority of our soils, however, as the roots of the grass not only take the moisture from the soil, but they rob the trees of their food.

Where the climate is severe it is not, as a rule, advisable to plow the land in the fall, but it should be done as early as possible in the spring, that the roots and leaves of the grass may decompose and provide humus and plant food. While the plowing should be thorough, the furrows near the trees must be shallow, in order that the roots may not be bruised and torn. From the time the land is plowed it should be dragged once in ten days or two weeks, until about the first of August. A disk, cut-away or spading harrow answers well while the sod remains, but after this has been broken up, a spring-tooth or smoothing harrow, or, on light soil, a weeder may be used. Where the orchard is of bearing age and the roots of the trees occupy the soil, it is not advisable to grow any crop between the rows, as, even though the land be well cultivated and supplied with plant food, it will very certainly result in reducing the growth of the trees and the

size of the fruit. While the trees are young some hoed crop may be used, but the selection should be such that the ground can be cultivated until at least the middle of July, and that will not make it necessary to stir the ground during the growing season in harvesting the crop. If the product can be utilized it is a good plan to use such a crop as squashes, pumpkins or melons, as then the hills will be six or eight feet away from the trees. The selection of any of the spring grain crops may be avoided.

About the middle of August some winter cover crop should be sown. As droughts often prevail at that time, it is sometimes difficult to secure a catch, but fairly good results can be secured with oats, sowing about two bushels per acre. They will make a growth of one or two feet, according to the character of the soil and the season, before they are killed by frost. This and the other cover crops serve a useful purpose in the fall by taking the moisture from the soil and lessening the danger of a second growth and the swelling of the fruit buds. During the winter they hold the snow and leaves and thus not only lessen the depth to which the ground freezes, but serve to prevent alternate freezing and thawing, and the resulting injury to the trees. In the spring the winter-killed oats will act as a mulch and prevent the rapid drying out and baking of the soil. When the ground is bare it is necessary to work the ground early in the spring to prevent the loss of moisture, but if covered with a good mulch the plowing can be put off if necessary, until the first of June. It is also possible when oats have been used as a cover crop to do away with plowing, as a spading or disk harrow will loosen the surface soil and work in the mulch to form humus. Rye is also used to some extent as a cover crop, but unless plowed under early in the spring it will dry out the ground and increase the tendency to bake. If left until the heads have formed, as is the common practice, it will be practically impossible to plow the land if heavy, except turning it over in clods. It will be difficult to turn under the straw and it will decompose very slowly.

In some respects the clovers and other leguminous crops are desirable for this purpose, as they not only supply humus, but a considerable amount of nitrogen that they have the power to take from the air. Crimson clover is often used, but it is diffi-

cult to secure a catch in August and it does not make much of a growth before winter, when it is likely to be winter-killed. When it survives the winter and is allowed to stand until in blossom it causes the loss of a large amount of moisture which is particularly desirable for the trees at this time. The same is in a general way true of red clover, and if either of these is to be used as a cover crop it should be sown as early as the middle of July.

Good results can also be secured with cow-peas, by sowing them in drills two feet apart early in July, and working them as long as possible. This crop is injured by the slightest frost and will succeed best in warm locations in the southern part of the state.

When the trees are making an average growth of more than one foot each year, and the soil is naturally moist, fairly good results are often obtained if the land is seeded to red clover for two years, and Canada peas are often used in the same way. Hogs and sheep may be used to gather up the fallen fruit and destroy the insects that it contains. If care is taken that they have a sufficient amount of food they will not injure the bark.

The Use of Fertilizers.—When the soil is fairly rich and a good sod is turned under, a sufficient amount of food will generally be provided to produce one crop of fruit, but, after that, steps should be taken to supply the needs of the trees. Ordinarily, stable manure and wood ashes will furnish the elements lacking from the soil, and twenty loads of the former and one hundred bushels of the latter per acre will suffice for two years. Stable manure supplies nitrogen, potash and phosphoric acid, but, as the nitrogen is likely to be slightly in excess, it is advisable to apply the ashes also, as, in hard-wood and unleached they should supply about five per cent. of potash and one and one-half per cent. of phosphoric acid. Potash can also be purchased as a salt in the form of muriatic and phosphoric acid as dissolved phosphate rock or ground bone, but at the present prices for the materials it will be cheaper to use a good grade of unleached wood ashes at fifteen cents per bushel than to buy them. There are also a number of brands of commercial fertilizers that are prepared especially for fruit trees, but while it may

be advisable to purchase them if only a small quantity is needed, they are as a rule considerably more expensive than a home-mixed fertilizer than can be readily prepared from the materials mentioned above. It is a good plan to apply stable manure broadcast and plow it under, but the application can be made at any time after growth is over in the fall. Unless the ground is very rolling there will be little loss from washing. The same rule will apply to the application of wood ashes and ground bone, but when using the more soluble and higher-priced chemicals it will be better to apply them in the spring.

Pruning the Trees.—When renovating old orchards one of the first things that will require attention is the pruning of the trees, but as no two orchards have had exactly the same pruning it will only be possible to give general rules. Some orchards have never been pruned, while others have been so slashed and cut with the axe and saw that they can fairly be said to have been murdered. In the first case, and especially if they are of varieties with spreading branches, it will often be impossible to get under the trees with a team to work the ground. If the trees branch close to the ground it would often require very severe pruning to make it possible to drive a horse within four feet of the trunks of the trees, and the injury might be greater than the benefits that could be secured from cultivating close up to the trees, especially as most of the feeding roots are some distance away from the trunk, and when the heads are low-branched the shade is generally sufficient to, for the most part, prevent the growth of grass and weeds. It will, therefore, be well to go slow before sawing off the lower limbs in a neglected orchard sufficiently high to permit of cultivation. On the other hand, it is possible to so thin out the lower branches as to permit the passage of a team without cutting any of them back to the trunk. On nearly all unpruned trees there will be found a large number of branches that midway, or even farther out from the tree, send downward a number of shoots. By the removal of these the object desired can often be obtained. We can also advise the removal of all dead and dying branches, and when they are so thick that they rub or cross, there can be no question of the advisability of thinning out the heads. When the heads are thick, both leaves and fruit will be shut out from

the sunlight, and the roots will often be over-taxed to supply food and moisture. While the heads should be sufficiently open to avoid this, and to make it possible to readily gather the fruit, care must be taken not to open the heads sufficiently to permit the sun to enter and burn the bark on the branches, as often occurs when large branches are removed. As the other extreme, we often find trees where the saw and axe have not been spared and the branches have been cut away until there are but two or three, and these consist of bare poles with a little tuft of twigs and leaves at the end. Often the trunks are hollow, the bark cracked and dry and the sap wood but a thin layer. If a large proportion of the trees are in this condition it is a question whether it will be worth while to attempt to renovate the orchard. If the wood and bark are fairly healthy, much can be done in sections where there is little trouble from sun-scald, and especially if the twigs are stunted and moss-grown, or covered with oyster-shell scale, by cutting back the branches to where they are an inch or so in diameter, and inducing a new growth of healthy twigs. By thus reducing the number of buds and throwing the full force of the trees into those that remain, the shoots formed will be strong and vigorous and covered with large and healthy foliage. It is possible in this way to fill up spaces in the trees where branches have died or have been unwisely cut away. While water-sprouts in a tree are not desirable, they generally are the result of injuries, or of injudicious pruning, and, if at least midway out the branches, some of them can often be left to grow to advantage. Care should be taken to keep the heads of the trees well-balanced, although it is generally desirable to have them thickest on the southwest side.

Ordinarily the best time to prune old trees is just before the growth starts in the spring, but as this is generally a busy time on a farm, the work may be done during the late fall or winter. An objection that is raised to this time for pruning is that the wounds do not heal well and the stubs often die back. This is true to some extent, but if the branches are not frozen when the pruning is done, the injury will be but slight. If the trees are making a rank growth and are unfruitful, it will often be found

advisable to delay the pruning until the last of May when, the trees being in leaf, they will be subjected to a check and the formation of fruit buds will be promoted.

Spraying for Insects and Fungi.

Our fruit trees are infested with a great variety of insect foes, some of which bite off and consume the leaves, while others feed on the fruit or branches; another large group of insects, which includes the plant lice and scales, suck the sap from the branches. They are especially troublesome in old orchards, and to make the process of renovation complete steps must be taken to destroy them. Great damage is also done both to foliage and fruit by parasitic fungi, which reduce the leaf area and abstract the nourishment needed by the tree, as well as lessen the size and spoil the appearance of the fruit. Formerly the injury was ascribed to some unfavorable condition of soil or season, but although this may have much to do with the development of the disease, their parasitic nature is now generally recognized.

As the injury from these pests increased, the ingenuity of man served to find remedies for them. He has learned that nearly all chewing insects can be controlled by spraying with some material containing arsenic. Paris green has been used for this purpose, but white arsenic is now recognized as much cheaper and even more effectual. For the sucking insects kerosene emulsion and whale-oil soap have been the favorite remedies, but during the last five years have had to yield to the mechanical mixture of kerosene and water, applied with special pumps. This is easier to prepare and apply, considerably cheaper and even more effective.

In old orchards it does not pay to attempt to grow fruit without spraying also for the fungous diseases. The most effectual remedy is Bordeaux mixture, which has the important advantage of being applied at the same time with the arsenites, as well as of increasing their efficiency and lessening the liability of their injuring the foliage.

It is a good plan in the early spring to spray the trees with a strong solution of sulphate of copper, and then to use Bor-

deaux mixture and an arsenite just before the blossoms open. This should be repeated as soon as the petals have fallen, and, if either insects or fungous diseases are troublesome, another application should be made in two or three weeks. This will usually suffice to ward off the chewing insects and fungi, but if the varieties are especially subject to attack another application early in July will often be found profitable.

In the use of fungicides we must remember that they are mainly preventives and that the best results will not be secured unless they are applied before the trees are attacked. By covering the green portions of the trees with a thin coating of some fungicide, we render them proof against the entrance of the germinating spores, but, if any parts of the plants have not been reached, they are still vulnerable, and while the severity of the attack will have been lessened it will not have been entirely prevented. The importance of thoroughness in spraying should then not be overlooked.

For large trees, and especially if the area to be sprayed is extensive, one should have an easy working spray pump, mounted upon a tank that will hold eight or ten barrels. The material should be applied in a fine mist and, to carry it to the tops of the trees, a spraying or extension rod is a necessity. It should be ten or twelve feet long, and with the man standing upon the top of the tank, or if desired upon a platform still more elevated, the work can be thoroughly done.

As will be seen from the above, the treatment required for the renovation of an old orchard is practically the same as has been found by our more successful fruit growers needed for the best results in the handling of a young orchard, or one that is in its prime. While location, soil or other conditions may often make it possible to dispense in whole or in part with some of the treatment recommended, in the majority of orchards none of them can be entirely neglected without danger of loss.

Cultivation, manuring and spraying may be said to be the tripod upon which all hope of success in fruit culture rests, and with judicious pruning will not only make our young orchards fruitful, but will enable us to so renovate our old trees as to insure profitable crops.

Mr. Hatch—At a meeting of the Michigan Horticultural Society which I attended, Prof. Taft supplemented this paper with some statements regarding cultivation that involved principles that were very startling to me. I subsequently found also in a publication by the president of the Michigan Horticultural Society, who is with us, a statement advising cultivation involving the same principles. These were at variance with my study and teaching for thirty years; they were at variance with what we have accepted here in Wisconsin as essential; they were at variance with what we have been emphasizing and have accepted and fortified ourselves to believe correct, with such authority as Prof. Bailey to fortify our position. Prof. Taft first startled me by saying that he did not consider a cover crop essential and under certain conditions would cultivate the orchard continuously even to the middle of September.

What we have been emphasizing here in Wisconsin is this: that since a fruit tree completes its growth by mid-summer, or first of July, cultivation should cease then, and we should allow the tree its own way to mature and ripen for winter. We have emphasized that until we have got to believe it pretty thoroughly. Now if a cover crop is essential, I found that we were meeting a difficulty two years ago that we were utterly helpless to overcome. That difficulty arose from the fact that the soil at the surface was so dry that we could not get the cover crop to sprout and grow. Prof. Taft thought that if the weather was excessively dry, we should continue the cultivation of the orchard at frequent intervals, even to September.

The position as Mr. Kellogg had put it and stated in the publication that I refer to, was in answer to the question, "When shall we quit cultivating our raspberries?"—involving the same principle of management. Now he says, if we have a spell of wet weather, and the surface of the ground is wet and solidified by the rains, and that is succeeded by a spell of dry weather and a drouth comes on, the surface of the ground is closed up and the evaporation of moisture goes on, and the plant suffers a check. If cultivation is resumed later in the season, you start a new growth. In the case of the drouth where we could not get the cover crop, the plants went into winter quarters only to suffer with root killing and winter killing.

Now here is the idea that I believe was one of the most valuable cultivating ideas that these two gentlemen brought out, it was this, *that the moisture and tilth conditions should be continuously favorable*, not only for the growth of expansion and cell formation, up to the first of July, but to the end of the season. After July first the growth has not ceased in the matter of maturity and drawing into the trees and plants the food elements that make them profitable trees or plants for the production of fruit next year; or, in other words, loss of maturity that is caused by drouth is something that would not be remedied if we depended upon all seasons to help us out. Under ordinary conditions we may have moisture sufficient so that we can stop cultivation by midsummer and allow the cover crop to help us out. Under *extraordinary* conditions, as in 1898 to 1899, we had conditions so we could not help ourselves. Now Mr. Kellogg especially emphasizes the fact that if cultivation is continued, the moisture conditions are continued, there is no check to the growth, and you can determine the question when to quit cultivating your raspberries.

Now I believe this is the first thing to remember, that growth conditions should not be checked by anything that we do, but we ourselves should so manage, so cultivate and so arrange things that no matter what the weather conditions are, the plant still supplies its needs. You must admit, if the drouth is severe, that the pores of the earth have been stopped up at the surface, evaporation goes on, and there is no chance for precipitation of moisture downward from the air into the soil.

Now I believe this is an advance in cultivation that well pays us for sending me as a delegate at the expense of this Society to bring back these two gentlemen to tell us these principles of cultivation that are in advance of anything that we have had for years. It is *principles* that we want, that we can apply; something that we know how to do to help us over these difficulties that otherwise would be insuperable, and I want to call your attention to this and emphasize it as something in advance of what we have had heretofore. I believe it is one of the most important principles that we have, that cultivating should *always and continuously* supply the tree or plant with those conditions that will qualify it to supply all its needs from the be-

ginning of the growing season to the close of the growing season; that you shall not be helpless before drouth; that you shall not be helpless before storms of rain, that you shall not be helpless for want of a cover crop. Now if I have misstated the question in any way, the gentlemen are here to defend, and I think they will simply agree with me and enlarge upon it, if you care to have it, and I commend it to you as one of the finest things in advanced horticulture that we have had along the line of cultivation.

DISCUSSION.

Prof. Van Deman—I believe that not only in Wisconsin, but in all the states of the Union and in the territories as well, we are just beginning to understand what has been very tritely called the gospel of good tillage. Now the western people, and by that I mean those who live in the arid regions, have been driven by force of circumstances to practice good tilling, and the eastern people know very little about good tillage as compared with the western people. Those of you who have traveled in California and other of the western states know and can realize how emphatically they have this matter of good tillage in their minds and practice it upon their orchards and their cultivated ground. Now I think that this is a very essential point that Mr. Hatch has just made very clear to us in my mind, and the speaker has also mentioned it, and it is being constantly preached to us in various agricultural meetings, this matter of continuous cultivation, in opposition to the ordinary method of stopping about mid-summer and letting the weeds grow and take care of the orchards from that time on. Now Mr. J. H. Hale of Connecticut, who is one of the most practical fruit growers of the United States, has come to the belief, after a series of years of experience, that the proper thing to do is to cultivate all the time, continuously. I have heard him say so within the last two months on two occasions. He says that if the cultivation is carried on thoroughly and continuously, that when these dry spells come they do not affect the growth of the

trees and the fruit, and the trees will mature their wood very much better than if they are allowed to have a period of rest, along say in July or August, and then after the fall rains come on, make a spurt of new fresh growth that is apt in a state like this to be caught in a frost and suffer damage. Now Mr. Hale in his Georgia orchards has to contend with this summer drouth, and when he is in Connecticut he has to look out for frost, and he says that the best thing he can do is to keep on cultivating, then the wood will take care of itself if you just keep the soil in proper condition. As I said yesterday, these frequent cultivations will bridge over the space between drouths, and yet there will not be the checking of growth that would result if we stopped the cultivation.

Mr. Hatch—We have assumed and tried to emphasize the fact that late growth was necessarily stimulative growth. Now is it not true that that would be stimulative after this check, but not necessarily so, provided it simply made conditions favorable, moisture and thrift and aeration, so that the plant grows right along?

Prof. Van Deman—Certainly, if the cultivation is continuous and thorough, then there would not be a check.

Mr. Hatch—Then this later cultivation is not necessarily stimulative?

Prof. Van Deman—No, sir; it is not.

Mr. Hatch—But the stimulativeness that we have been guarding against was that that would come in late cultivation, after the check, and it is really a matter that might occur with rain, it would occur, say, in the Cuthbert raspberry, but this season, with better cultivation of my raspberries I have not had that late growth. My trouble in this particular was I did not cultivate them right, and of course I have been laying it to the season or the variety, and I have just made this discovery.

Prof. Van Deman—Now regarding the question of old orchards, that is a subject which has interested me intensely for a good many years, in fact, I was born right on the edge of an old orchard that my grandfather planted, and I had been constantly brought in contact with old orchards from that time until now, and, to make a long matter short, the fundamental trou-

ble with old orchards is neglect. That is the sum and substance of the whole thing, it is neglect.

Now as to manures, I think there is nothing better than stable manures to put in an orchard. It puts in humus and the three elements that are essential in all manure, nitrogen, phosphoric acid and potash. There is danger of getting in too much nitrogen, and I think we do not perhaps thoroughly understand that nitrogen has the tendency to defer the maturity, to prolong the growth. An orchard or any fruit plantation that is highly manured with nitrogenous matter will ripen its fruit later than that which is rather scant in nitrogen.

Mr. Hatch—Can we tell when an orchard lacks either of those three elements, especially phosphoric acid?

Prof. Van Deman—When an apple orchard tree in bearing condition does not make a foot of annual growth at the ends of the limbs, it is an indication that it needs nitrogen.

Mr. Hatch—Suppose it has, how can we tell it needs phosphoric acid?

Prof. Van Deman—Well, usually there is plenty of phosphoric acid and potash in the soil, the average soil has plenty of it.

Mr. Hatch—How can we tell we have plenty of potash?

Prof. Van Deman—Well, it will be told by the difference of color and the size of the fruit. It has more to do with the color and size than almost anything else. You might say potash is the backbone of all fruit manure, is the most potent thing you can name among the elements of fertility.

Mr. Hatch—Does it tend to earlier ripen the harder wood?

Prof. Van Deman—Well, it has that tendency; it causes the tree to mature, and so does phosphoric acid, and, as Prof. Taft says, if you are going to get that, the very cheapest form is the muriatic phosphate, a phosphate rock and dissolved bone, and a great many people do not understand the difference between phosphate rock and dissolved bone, they are practically one and the same thing.

Mr. Chappell—I want to ask the Professor one thing,—if he does not think when the tree is not cultivated in an extreme drouth to keep moisture around the tree while the fruit buds

are forming, that the fruit buds are weakened by not cultivating, and the next spring we lose our fruit, when the blossoms are too weak to form fruit, as was the case here in Wisconsin a year ago last spring.

Prof. Van Deman—I think that is very likely to be true, yes. Any tree that is not vigorous can not produce good, vigorous blossoms. That is the great effort of the tree, is this fruit production.

Mr. Chappell—My experience is we must feed the tree moisture enough so there is life and strength to it to form the fruit buds, when they are forming, to make them full and strong, to form fruit the next year.

Prof. Van Deman—There is one point I forgot in my talk, and that is in regard to the matter of natural fertility in the soil. I said, if you remember, a few minutes ago, that there was in the average soil an abundance of potash and phosphoric acid, there is nitrogen, too, a considerable portion, but the cultivation is the thing that conserves the moisture and dissolves and helps to unlock this latent fertility that is in the soil. That is the secret of it. I do not care how much you have,—if you had a million pounds to the acre of the best commercial fertilizers that were ever put in, if you did not have moisture in there it would not dissolve.

Prof. Goff—Mr. President, I have been greatly pleased with this discussion, but I wish to ask one question,—What are we giving to the fruit orchard soils in winter if we cultivate clear up to winter? We know in this climate, where we are likely to have snowless winters, if the ground is bare it freezes much easier than when it is not, and we are taught by the professor of horticultural chemistry that it is better for the soil to have some kind of crop on it to prevent the waste of nitrogen through leaching. Now shall we leave our orchard ground entirely bare through the winter, or what shall we do to prevent this waste?

Mr. Hatch—I understand Prof. Taft's position to be that, while it is not essential, the cover crop is desirable, and I would like to ask him to enlarge upon his idea a little.

Prof. Taft—I would say when it comes to the cover crop, I do want it, if possible, and the principal reason why I prefer

the oat to any other crop, is that we can sow this crop quite late in the season, and if the season is dry we are enabled to cultivate the orchard to the middle of September with us in Michigan, and can then sow oats and get a good catch and they will be high enough to hold the snow. If sown in September, they will reach a height of one foot, and if they are sown thick enough that makes a very good cover crop.

Prof. Van Deman—I am certainly in favor of a cover crop during the winter instead of leaving the bare ground, if possible, oats or rye or winter vetch, that will keep the ground covered in the winter time.

Mr. Chappell—My objection as to rye is that the mice would get in and feed upon it in winter and girdle our trees.

AFTERNOON SESSION.

Wednesday.

The President—Before we will take up the subject of insects, we will listen to the reading of one of the prize papers, on “Strawberries.”

PLANTING AND CARE OF STRAWBERRIES.

By L. A. Carpenter of Fond du Lac.

[This paper was awarded the first prize, five dollars, given by the State Horticultural Society for the best essay on the culture of the strawberry.]

PREPARING THE SOIL.—The two essentials for success in growing strawberries are a rich well drained soil, which has been planted to some hoed crop for two years to destroy the white grub, and good cultivation. If coarse manure is to be used it should be applied the year previous, that it may decay and become thoroughly incorporated with the soil. Well rotted manure can be applied at any time. Plow the land in the fall and the action of the frost during winter will break up the par-

ticles so that it will work up fine and mellow in the spring. The plants should be set as early in the spring as possible that they may get a good start before the weather becomes hot and dry. Just as soon as the soil is fit to work go in with a disc harrow and cut it both ways to a depth of four or five inches and finish with the Acme pulverizer followed by the float, which will leave the surface smooth and fine.

PLANTS.—Plants should be taken from beds set the previous year, and which have never borne a crop of fruit. Experience shows that plants taken from beds which have been exhausted by fruiting are far inferior, both in vigor and productiveness. After digging, the plants should be trimmed, all dead leaves and runners being removed, and all inferior and poorly rooted plants thrown out. Do not expose the roots to the wind or sun or allow them to become dry. If not wanted for immediate planting pack the roots in moist sand or soil and keep in a cool dark place. In this way they can be kept for several days and new white rootlets will start, and the plants will be in better condition to grow than if planted when first dug. If plants have been shipped they should be unpacked as soon as received, the bunches opened, roots moistened and packed as above until they can be planted.

SETTING THE LINE.—Set the stake with one end of the line attached, at one end of the first row. Pass the line across the field and around a stake set at the other end of the row, and set the stake, attached to the string, at the end of the second row. Now begin at this end and plant to the end where we first started. The line can then be easily pulled over the stake at the other end and will be set ready for the next row. By repeating this at each end the line can easily be moved over without any extra travel.

SETTING THE PLANTS.—Make the rows four feet apart and set the plants from eighteen inches to two feet apart in the row. In setting, we use the spade, two working together. The one handling the spade goes backwards, sets the spade into the ground facing him and presses it down with his foot. He then draws it towards him, at the same time raising it a little, leaving a square shoulder on the other side of the hole. The second man takes the plant, spreading the roots out fan-shaped, and

places it in the hole against the shoulder, being careful to have the crown of the plant just even with the surface of the soil. The first man then withdraws the spade and at the same time presses the soil back into place with his foot and firmly around the roots of the plant. The difficulty in setting by a mark is that the surface is not level and the plant is apt to be set too deep. A handy tray for carrying the plants while setting is made by putting a bail onto a tin pan, in which water should be kept to keep the roots moist. If the ground is in good condition at the time of setting the plants will not require watering, but if watering is necessary they should be hoed soon after and some dry dirt drawn up around the plant, to act as a mulch in checking evaporation and to prevent the soil from baking around the plant. Many times, watering without hoeing is worse than not watering at all.

CULTIVATION.—Cultivation should begin as soon after the plants are set as possible. In setting we necessarily tramp the ground, which packs it down and causes rapid evaporation. By loosening the surface soil we break up the capillary action and form a mulch which retains the moisture. If this is done the same day the plants are set, a large amount of moisture can be saved and just at the time when the plant most needs it to repair the damage done to its members by transplanting. A fine tooth cultivator is best, as it does not throw the dirt onto the plants and leaves the surface fine and level. They should be cultivated about once a week and a crust should never be allowed to form. Soon after the plants are set blossom stems and runners will be thrown out; in hoeing, these should be cut off and the soil loosened around the plants. Cutting out the weeds is only a small part of hoeing, for it is just as important to have the soil loose and fine around the plants as it is to have them free from weeds. Keep the runners cut until about July 1st, when the plant will be strong and well rooted and will throw out a number of good strong runners which will make a better and more even row than if the first ones had been allowed to root. After the runners begin to root the cultivator should always go the same way in the row, so as to draw the runners up into the row. As the row widens the cultivator should be narrowed until the rows are about two feet wide. Continue cultivation until it

freezes up in the fall. If no weeds are allowed to go to seed there will be little trouble with them the following season as nearly all of the seed near the surface of the ground will germinate the first season.

WINTER PROTECTION.—As soon as cold weather sets in the bed should be covered to protect the plants from the changes of temperature. It is not the cold weather which kills the plants,—for I doubt if there was ever a strawberry plant frozen to death,—but it is the continued freezing and thawing which breaks up the tissues, and, if the soil is at all wet and soggy, heaves them up and breaks the roots. As a general thing the covering should be put on as soon as the ground is frozen solid enough to bear a team and wagon. Plants will sometimes go through the winter without protection and come out with apparently very little damage, but early covering is the only sure way. Plants that were covered just before it froze up have come out in the spring with their foliage as fresh and green as it was in the fall. Cover just enough to hide the foliage. Where it can be had there is nothing better for covering than coarse marsh grass, as it lies up light over the vines, admitting free circulation of air, and contains no weed seeds which will thrive on high ground. If manure is used the fine rotten portion should be worked down between the plants, and the foliage covered with the coarse strawy portion. If the wet, ammonia-soaked chunks are allowed to lie upon the plants they are apt to be smothered and rot in the crown. Leave the covering on in the spring until the plants begin to start, then remove just enough from over the row to let them come up through, leaving the greater portion on the ground to act as a mulch and keep the berries clean. When the plants begin to turn white no time should be lost in removing the covering. If it is left and the leaves become drawn and white the plants will be exhausted. Such plants seldom bear fruit and are worthless.

CARE OF THE BED AFTER FRUITING.—The largest and finest fruit is produced the first season, but it usually pays to pick a bed two, and sometimes three, years. Just as soon as the last berry is picked the bed should be mowed. Let it lie and dry a few days and, if such as will burn readily, go through and shake it up a little over the row, so that the fire will run over quickly,

and when there is a good breeze set it on fire and burn it over slick and clean. This will destroy any insects or fungus disease there may be upon the plants. The plants at this season are exhausted from fruiting and are partially dormant and the fire will do them no harm; but it should not be delayed long after picking is finished. If the bed is not burned over, the rubbish should be raked up and drawn off. When the bed is cleared go in with a plow and turn two furrows between each row, which will throw some of the soil up over the plants and narrow the rows up to about one foot wide. Then take the harrow and harrow it thoroughly both ways, until the soil is smooth and fine. This will take out some plants but there will be plenty left. New leaves will soon start and in a short time runners will be thrown out and, with good culture, will make a good row by fall.

Prof. E. C. Green, of Urbana, Ill., then read the following paper on "Insect Enemies of Trees and Fruit."

INSECT ENEMIES OF TREE AND FRUIT AND HOW TO CONTROL THEM.

E. C. Green, Urbana, Ill.

Though the word economically is not used in the title of this paper, there is no question that it is implied. Remedies are of no value unless their use brings about, sooner or later, material benefits sufficient to more than reimburse the user for time and substance expended. Insects enemies of tree and fruit and how economically to control them. How best to rid the tree of the more important pests at the least expense to the orchardist, and hence, to increase his net profit.

There is often a temptation in a paper of this sort to theorize, or to sacrifice accuracy even, for the sake of making the discourse interesting and attractive. The writer is inclined to allow his imagination to bridge over any uncertain ground in the

life-history of an insect, and, in cases where former insecticide operations have proven unsatisfactory, to invent some fair sounding remedies for those particular instances.

That this temptation has not always been resisted by the men who have written on these subjects is evidenced, in one instance, by the early writings on the egg laying habit of the Codling moth. And so widespread today is the erroneous information thus started into circulation that four out of five fruit men when asked, will say that the eggs are laid in the blossom end of the apple. Turning to the theoretical remedies, it is found that many as are the treatments which did not kill the insects, they are neither so many nor so conspicuous as are the treatments which did kill them and the trees, as well. Mention Dendrolene for peach-borers, Gasoline torch for aphids, etc., and before the mind's eye appears a vision of the ghosts of departed trees. It is my endeavor in this paper to present only such facts as are established by the observations and investigations of the ablest scientists of the world and only such remedies as are approved and practiced by the successful orchardists of this country.

Before beginning the discussion of specific insects a few general statements may be made concerning the health, care, and treatment of an orchard. The trees, to best withstand the attacks of these little enemies should, first, be in a healthy condition, the bark not thin and dull but clean and bright; second, they should be adapted to the soil in which they are placed, and should show by growth, fruitage, or both that their food supply is ample; third, they should receive such cultivation as is essential in preventive measures against some of the most common and serious pests. The canker-worm, especially, the apple curculio and others are practically beyond control in an orchard long in sod. The orchard culturist will give other sufficient reasons why the trees should be cultivated, but aside from all these reasons the problem of profitable insect control requires that the orchard be in cultivation, at least through May and June.

In the second place, under this head, the economic destruction of certain insects requires that the trees be pruned. The ques-

tion of proper pruning for the best fruit production and the general welfare of the trees is not discussed here, but only such pruning methods as are absolutely necessary for the most thorough application of insecticides. That 60 to 75 per cent. of an apple or a plum crop may be saved without any pruning preparation may be cheerfully admitted, but that 90 per cent. of those same crops may be preserved, after pruning, other things being equal, with the same amount of time and material, is stoutly maintained. The expert will show that for size, beauty, and quality of fruit alone, it pays to prune the trees, but outside of any consideration he may present, the fact will stand that pruning is essential, if the plum curculio is to be controlled in commercial orchards, or the codling moth most successfully combated in apple plantations. It is self evident that the control of insects requires the use of insecticides, and these insecticides must be economically prepared and thoroughly and intelligently applied, or at the end of that season the orchardist may find the balance on the wrong side of the ledger. There is a time to spray for codling moth. That time is fixed by the stage of development of the young fruit more than by any other one fact or condition. It can not be determined by the number of the enemy as that number is an unknown quantity. There is a time for spraying canker worms and that time is ascertained by the appearance of the enemy. His numbers are to a great extent a known quantity and the repetition of the insecticide operation is dependent upon his visible persistence. It has become a habit to base the number of spraying operations on time intervals. In the instance of certain fungus diseases this is still advisable, but in the case of known insects and in the presence of the intelligent orchardist it is never necessary. Before the time when spraying was known to be essential to fruit growing, in the dark ages of horticulture, it was expedient to form empirical rules for the guidance of those having little knowledge and no experience in the matter. These rules often took the form of a spray calendar. The spray calendar was a messenger of hope to the despairing orchardist. Insecticides were used according to the rules therein, at first, experimentally, then with the assurance and finally as one of the ordinary and necessary

steps toward a fruit crop. At present the commercial fruit grower in pursuing the commendable purpose of lessening the cost of fruit production, looks back of the spray calendar to the principles and facts on which it was based. He wants to know why the calendar says, "For codling moth: 1. Paris green immediately after blossoms have fallen. 2. Repeat 7 to 10 days later. 3, 4. Paris green at intervals of one to three weeks after 2." And in finding the way he probably discovers that under ordinary conditions two or even three of the four applications are practically valueless. The spray calendar says to the totally uninformed, Treat trees at certain intervals after this manner and the chances are that the insect enemy will be destroyed. The progressive orchardist has passed the calendar stage, and by the aid of observation and knowledge of the botany of the tree, the habits of the insects and the properties of arsenites, has saved a large per cent. of the former cost of spraying operations, besides increasing their efficiency through better understanding and more care taking applications.

In brief, for the successful and most economical control of insect pests of the orchard it is necessary to cultivate, to prune and to spray. These operations vary for different trees, insects and conditions, and hence can be discussed best only in connection with specific cases.

I wish to call your attention first to that group which have a direct influence on the health and vigor of the orchard, those insects which in one way and another attack the bark of trees. Under the head come the scales, the oyster-shell and the scurfy scales, the Putnam, Forbes and San Jose scales. With the exception of the last named these insects are common and because of their small size and inconspicuous appearance they are considered usually of no consequence to the commercial orchardist. There is no way of calculating the injury done and the amount of damage is not estimated. That they are tolerated in the orchard is largely because it is not generally known how much more healthful and vigorous the trees are without them. Wherever orchards have been treated for San Jose scales and through that treatment have been cleared of the common scales, the owners, in many instances, have been so pleased with the result-

ing, well-marked improvement in vigor and productiveness of the trees that they have continued the application in subsequent years for the general improvement alone. When the trees are badly infested with any of the scales the bark becomes hard and dry. On young branches where groups of the insects sit the wood is flattened or disked and breaks readily at such points. On the older branches and the trunk the bark sometimes shells off readily, and again becomes dry and thin, and the trees are said to be "Bark-bound." The growth of the trees is seriously interfered with, and the crop when present is likely to be inferior, individual fruits having pits and flattened spots caused by the presence of scales on them. Nevertheless, the very commonness of these insects causes most men to be contemptuous of the injury they do. As before said, there is no way to estimate the damage directly due to these common orchard scales, at least this is true for the old trees, and as treatment for these alone is not in general practice, it may be as well to refer the matter back to the commercial orchardist and await his final report. However, the question as to treatment of the young trees, those just from the nursery, is established beyond peradventure.

The small trees suffer a check from transplanting to the orchard and while in a depleted condition, provided the insect is present, are likely to suffer severely from attack before sufficiently recovered to withstand it. This is one of the common causes which combine to bring about the death of the young orchard. An apple tree infested with oyster shell scale was set on the grounds of the Illinois state exposition covered with scales. It died two years later. When trees are received from the nursery they should be dipped into kerosene emulsion as a precautionary measure, before being planted. Avoid wetting the roots.

There is probably nothing of special interest in the life-histories of these insects. They breed with sufficient rapidity to be a menace to the fruit interests and would be were they not constantly held in check by their natural enemies. If it is desirable to treat trees which are badly infested, it is well to bear in mind that the oyster-shell and scurfy scales pass the winter

in egg form and while in that stage are practically beyond the reach of the usual emulsion. But a weak emulsion, about ten per cent., gauged by the effect on the young leaves, will kill them readily after hatching in spring, about May. The Putnam and Forbes scales, like the San Jose, pass the winter as living insects beneath their shells, and are best reached by strong emulsion just after the leaves drop in autumn.

Beside the scales there is another bark-injuring insect, specimens of whose work lie before you. The Buffalo tree-hoppers are by no means new enemies, and of recent years they have been especially troublesome in the western part of the state. The injury is caused by the female in the operation of depositing her eggs. Young apple trees most usually suffer from the species *Ceresa taurina*, while peaches and dwarf pears appear to be most commonly attacked by *Ceresa bubalus*. The life history of the Buffalo tree-hopper is of interest to the practical fruit grower, chiefly from the fact that only through knowledge of its feeding habits during early stages can its control be accomplished. From all accounts there is but one brood each season. The eggs hatch in May or June. The larvae are small green hoppers without wings. They are not known to feed on fruit trees but usually get their sustenance from succulent annuals such as weeds and vegetables. After passing through a succession of molts the insects appear as winged adults about July 15 and from a month later until killed by frosts, the female deposits eggs in the twigs of trees. It is probable that each female lays between 100 and 200 eggs. The economic importance of these insects is due to the manner in which the eggs are deposited. In the case of *Ceresa taurina* the eggs are laid in apple bark, usually, one in a place tucked through a slit into the outer bark seldom injuring the cambium layer. These slits are from one-fourth to one-half inch apart and range along the stem from one to several inches. The incisions made by the ovipositor of the insects are not deep, and though the bark may be rough and unsightly the following season from the effects of the widening of the wounds, still the injury is in no way so serious and deep seated as is that of the larger Buffalo tree-hopper, *Ceresa bubalus*. In this case a deep broad incision is made

by the ovipositor and from 6 to 10 eggs are placed firmly in the cambium layer against the wood. Having finished filling the first cut, the insect, without moving from her place, makes another incision with her ovipositor nearly parallel to the first and curving towards it. From the angle at which the cuts are made, a small portion of bark is nearly or completely severed from the surrounding tissue. Eggs may then be laid in the secondary incision without danger of their being crushed by growing tissue. Though a wise provision for the welfare of the insect it is a serious matter to the tree. The following season the lips of the wound draw away from the central dead portion, leaving a dry scar which refuses to heal over. The second season finds the injured twig going from bad to worse, until finally it is a subject for the pruning shears. It may be seen readily, from the fact that the buffalo tree-hoppers are dependent upon succulent forage that the removal of all vegetable growth from beneath the trees during May and June would seriously interfere with their food supply. The insect during these months has no wings, it is small and can move about only by short hops. There is no doubt that thorough cultivation during the months named will eliminate this pest from the orchard. Observation goes to show that it is in small orchards and uncultivated orchards principally where damage is done. Supposing that the above measures are adopted and in consequence the egg laying becomes less general, still, there is the wounded bark to be renewed. In giving the wash recommended for orchard scales this is provided for. However, it may be further advised that the rougher and more scarified the bark the larger should be the proportion of soap used, whale oil soap preferred. This softens the bark and assists by stimulating its growth in covering a multitude of injuries.

Beside the scales and tree hoppers there are two old offenders which carry their depredations from the bark above to the bark below the ground and, hence, are usually known as root insects. The woolly aphid of the apple and the peach borer are among the oldest foes, and to this day they remain two of the most serious problems to the horticulturist. It is probable that in the southern part of this state more unthrifty trees are due to woolly

aphis than any other single insect pest. The tree usually becomes infested in the nursery, the check sustained in transplanting to the orchard establishes more firmly the aphis colony, and from that time forth the history of its life is a struggle to make a feeble growth each year and supply food for the enemies fastened to its roots. This is another instance where familiarity has bred contempt and little or no systematic effort is made to rid nursery or orchard from a modest, though costly boarder. The woolly aphis is such an old offender and its life history so well understood by all, that there is no reason to pause in passing it, save to suggest that it is of more consequence in horticulture than you believe probably, and to urge those setting out orchards to stand the trees in lye solution or strong tobacco water that no aphis may be introduced into the new plantation. In case the insect is already established in the orchard, nothing but a most liberal application of tobacco stems about the roots coupled with intense cultivation, will bring the trees into condition.

The peach tree borer, since the year 1749, has been recognized as the most serious enemy of the peach. It is common and even abundant in most nurseries and orchards. The first moths lay their eggs in June on the trunk of the tree, usually within twenty inches of the ground. In a week or ten days the minute larvae hatch. Those insinuate themselves into the crevices of the bark and begin feeding. Toward winter they eat downward toward the root, and by the time cold weather arrives are often established on the underside of a root, close to the stem and four to six inches beneath the surface. Here the winter is spent in a sort of torpor. In April they awake and feed voraciously, growing rapidly until May or June, when they move to the surface, and after spinning a cocoon, pass into the pupa stage. In about three weeks the moth emerges, and shortly thereafter, mating and egg laying takes place.

In 1899 Professor Slingerland published the results of five years' experimentation spent in the attempt to find some effective remedy. Eighteen washes of different sorts were tested, as well as various protective devices. In general, it was found that lime, soap, and Paris green are of no value in washes for this

purpose. Tobacco about the roots and stem kept out two-thirds to five-sixths of the borers. Wrapping from roots to lower branches with newspaper kept out one-half to seven-eighths. Mounding proved to be very effective. In all instances he advised using the digging out method in connection.

The leaf-destroying caterpillar, which most often forces itself into a position of absorbing interest, is the canker-worm. A voracious feeder, coming at a time when the foliage is tender and just pushing forth, it soon makes such an impression on the trees that even the casual observer can not fail to note its presence. From the fact that it is slow to respond to arsenical poisons many have said that it is not harmed by Paris green sprays. However, it has been proven that it will die in from twenty-four to thirty-six hours from the time of taking poisoned food. It must be remembered that during the period of its ravages young leaves are growing rapidly, and unless the spray is applied very thoroughly and often there is always a supply of unpoisoned food. But even though applications are most carefully made, during a bad outbreak it can not be conquered in time to save the crop for that season. The canker-worm is the diagnostic sign of a long-neglected orchard, and an outbreak is the grand finale of its undisturbed multiplication for many years. The nature of the insect and its life history show this very clearly. As June comes the larvae reach their full growth, and drop by means of the familiar thread to the ground beneath the tree. Here they burrow a short distance into the soil, and pass to the pupa state, remaining for the most part in this condition till the following spring. The male moths, beautiful, delicate white-winged creatures, then come forth as the buds open and fly about seeking their mates, but the females, being dull hairy, heavy-bodied insects, having no means of locomotion save their six slender legs, have to crawl laboriously up the trunk to the smaller limbs, where the eggs are subsequently deposited. The eggs hatch through a period of two weeks, and it is only when especially numerous that their destructiveness is appreciated. In the uncared-for apple orchard they remain for years, an unseen though important factor in lessening the annual production of the trees. In these days when horticulturists

are reaching out every hand and taking up the long-neglected plantations owned by unskilled farmers, and bringing them to a profitable condition, the canker-worm becomes a subject of interest. The question is how to free the old misused orchards most expeditiously. At best it will take one or two seasons. The first step is to plow the ground as early as possible in spring, and keep up a vigorous cultivation until July. Spray with any of the common arsenites at the usual strength when the little measuring worm first appears. Use the McGowen nozzle, since it throws the spray with more force than the Vermorel, and is more satisfactory for this reason, as well as on account of the fact that the neglected trees are likely to be too full of wood and brush to allow thorough work with a less forceful stream. It will be necessary to repeat the dose as long as the worms remain on the tree. When an orchard is in the state of cultivation usual to successful fruit raising, and the trees receive annually the codling moth treatment, the canker-worm is never heard of, and, were it not from the above-mentioned fact that many neglected orchards are now being renovated by horticulturists, I should not venture to discuss it before Wisconsin fruit-growers for fear it might be considered a reflection on the progressiveness of your orchardists.

Provided the general health and vigor of the trees have been maintained by the preventive and insecticide measures spoken of, the control of those insects actually attacking the fruit is simplified and facilitated. The fruit pests which have been so thoroughly discussed in the past are still live subjects to the scientist and to the practical horticulturist, and though all are conversant with most of the facts concerning them, still there remain some points unknown and some problems unsolved. The plum curculio and the apple curculio are still the hardy authors of untold annual loss. And so long as they remain so their discussion in such a meeting as this is not out of order.

The plum curculio comes forth from winter quarters usually in May, and for a few days before and during ovipositing feeds sparingly on the plum foliage. The egg-laying mark of this insect is so characteristic that this curculio is commonly known as the little Turk. The snout is used in cutting the deep crescent

mark, while the spot representing the star of the Turkish emblem is partly made by the ovipositor. The egg hatches, and the small footless maggot begins feeding under the tiny wilted flap which formerly protected the egg. As the larva grows it eats its way to the pit of the young plum, and there it sets up an irritation which eventually causes the immature fruit to drop. The larva soon leaves the fruit and enters the ground to pupate, emerging in a few weeks as an adult beetle.

It is reported by growers of European plums that the curculio can be controlled by the use of arsenical sprays alone, the whole success of the operations depending entirely upon the thoroughness of the application. It is advised by way of preparation to prune the plum tree so that no cross or parallel branches remain. The tree must be sufficiently open to allow the nozzles to be used freely in all parts of the head. The plums must hang free from the branches. Shortly after the blossoms fall a very thorough spray of Paris green, usual strength, should be given, and the material should be thrown from the inside of the tree outward, as well as from the outside inward. In case of rain the poison must be renewed. When the mark of the little Turk is noticed the strength of the spray should be doubled and sufficient lime added to protect the foliage. This mixture should be put on the plums themselves, drenching them thoroughly, the object being to fill the incisions made by the insects in the egg-laying process. I am assured that if this is done carefully, the larva is usually killed shortly after hatching, the wound gradually grows together and the fruit develops perfectly.

In small plantations the old method of jarring is satisfactory and profitable. The practice of confining chickens in the plum yard meets with good results. The habit the adult has of dropping to the ground to spend the day makes it a victim of the chickens below. Clean cultivation in the plum orchard is a wise preventive, and the spraying of adjacent cherry-trees, as recommended for the plum, should be considered part of the necessary procedure to preserve the plum crop.

The apple curculio has a life history similar to that of the little Turk, but its injury is done in a slightly different manner.

The adult eats a small circular hole in the skin of the apple, and then gouges about and eats until a small oval cavity is formed. In some of these cavities eggs are laid, but for the most part they appear to be merely the result of the normal feeding habit of the insect. The apple does not fall to the ground but continues to grow. Eventually the injury appears as a small pit or scar at the side of the fruit, or, as this abrasion offers an excellent place of entrance for the germ tube of some rot spore, the apple begins to decay at this point, and the secondary trouble finally ruins the fruit.

There is little to be said in the way of remedies. Cultivation is good as a preventive measure. Neglected orchards show the most injury, but the thrifty orchard is not exempt.

Since January, 1898, when that keen investigator and scholarly gentleman, Professor M. V. Slingerland, published his bulletin on the codling moth, there has been no excuse for the production of wormy apples. Still, strange as it may seem, it is rare to find exposed for sale perfect apples even in our own state and in our home markets. The commission merchants of our larger towns send to New York and New England for number one choice apples, and they sell them locally, there being no fruit in a class to compete with the imports. This is as lamentable as it is true. This condition must be due to ignorance or indifference on the part of the vast majority of the smaller orchardists, for no one having once understood how cheaply and simply the codling moth may be controlled would ever allow it to ruin another crop.

The life history of the codling moth, as demonstrated by Professor Slingerland, is of great economic interest. In the beginning the egg is laid, not, as so long supposed, in the blossom end of the fruit, but on the side of the young apple or a near-by leaf. The moth does not deposit the egg until, in most cases at least, the calyx lobes have closed, making it impossible for her to lay them in the blossom end even if she wished to do so. It is about two weeks after the blossoms have fallen that the moth begins to deposit her eggs. In about another week the eggs hatch and the young larvae move about seeking an entrance to the fruit. Though some may start to eat at the stem end, and others begin

to borrow from some place where a leaf lies sufficiently close to the apple to enable them to brace themselves against it, still, for the most part, the young larvae choose the blossom end as the easiest place at which to effect an entrance. They either crowd through between the closed sepals or chew their way directly to the inside. Once in the calyx cavity a few days are spent in eating about the interior before the journey to the core is begun. For from twenty to thirty days the worms feed upon the fruit, and when fully grown burrow to the outside, creep down the trunk to some sheltered place, and there spin cocoons and pass into pupa stage. In two or three weeks moths emerge, and a short time after the eggs of the second brood are laid. The larvae of the second brood usually attack the nearly full grown apple where a leaf lies against it or where two touch together. In this case they make shallow burrows about the spot and cause serious blemishes upon the fruit. The winter is passed by larvae in cocoons placed in sheltered and protected places.

In considering the treatment for this pest it is necessary to understand the action of the apple calyx after the blossoms fall. At first the sepals are widely spread, and they remain in this position for two or three days, then gradually draw together, forming a semi-tube, and finally, a week or ten days after the blossoms fall, become closed tightly together. The whole secret of successful treatment is in filling with poison this calyx cup before the sepals close. Which ever of the arsenites proves the cheapest that is the best for the purpose. If Paris green is used one pound to two hundred gallons is the right strength. Too much can not be said on the intelligent care with which this spray should be applied. The whole object is to fill the calyx cup. To spray while the tree is in bloom is a total waste so far as this insect is concerned, for the petals protect the calyx, or in falling away carry with them much of the poison from the place where you most wish it to remain. One thorough drenching spray applied three or four days after the petals fall usually proves the most satisfactory. Supplemental sprays are for the most part thrown away. The only thing which would necessitate the repetition of the treatment is a rain coming before the calyx closes. In spraying for this insect all parts where blos-

soms were must be well drenched, hence the tree must be pruned sufficiently to allow the poles and nozzles to be put to all parts. No thorough work can be done in an untrimmed tree. Some of the frame devices for wagons which allow the operator to be rather above his work are of great assistance.

In conclusion, it is unnecessary to tell the members of this Society, representing as they do the van-guard of horticulture, that it is profitable to keep the insect pests under perfect control. Experience has proven it to each one again and again. But there is a great body of men through the state who still neglect their orchards and through this neglect thousands of dollars are lost annually. May it be the policy of this Society to further in every manner the dissemination of information on this subject. It is of vital importance to the commercial interests of the state and is deserving of the most earnest consideration.

DISCUSSION.

Mr. Ihrig—At what time of the day or night do these insects or moths move about most?

Prof. Green—Mostly at night.

Mr. Ihrig—Is that true of all the different kinds of curculio?

Prof. Green—Yes, the curculio works at night also.

Mr. Hatch—In regard to the pear tree slug, is spraying advisable for that?

Prof. Green—No, I think not. Any fine dust will kill them. It is the simplest matter in the world to get rid of them; a very weak kerosene emulsion will do the business or a strong tobacco water will do it nicely, or fine ashes, or air slaked lime, or red dust.

Mr. Hatch—What is the reason that arsenic will not take them down; have you any objection to it?

Prof. Green—No, I guess not.

Mr. Hatch—In case an orchard is infested with bark lice, does the philosophy of good cultivation remedy the trouble?

Prof. Green—In the case of oyster shell bark lice there is no immediate connection, save that the tree makes a good vigorous growth and gives it a chance against the scale.

Mr. Hatch—If you get a good vigorous growth early in the season and the oyster shells, being largely on the young twigs, will it not extend to the bark underneath and drop off? I could not account for the wonderful effect of spraying and cultivation in any other way, and Prof. Lockhardt from Minnesota said that was true. I did not know whether you had observed the same thing.

Prof. Green—I have never observed that, but I can believe that very readily. I can easily imagine that it might be, but it is very doubtful.

Mr. Hatch—In the case of the pear tree slug, the only reason why you use the red dust would be the economy of it? The spraying is all right, is it?

Prof. Green—Oh, yes, simply economy, that is all.

Mr. Toole—Years ago I tried spraying for the codling moth, and was well pleased with the results. All my early apples were free from codling moth. We had the trouble with the late variety; I suppose that it was by this later brood that it was affected, and while we have been told that if we act up to what this other professor has told us, we would have had no trouble with the codling moth, I do not see how we can get clear of the depredations of this other brood. We may get rid of the first brood if we get around spraying early enough, but I do not see my way of escaping from this later brood.

Prof. Green—If you spray carefully in your own orchard, why, you are safe enough from that second brood. The insect does not fly far, it does its work close to where it is reared. It will lay eggs practically always in the same orchard; they do not migrate very much; they do not fly about. If you do one spraying in the spring, you will thin them out thoroughly, that you will not notice one per cent. of the trouble with your apples in the second brood.

Dr. Loope—If you sprayed thoroughly, say this last year, for the codling moth, and you do not see any of its ravages, are you going to have it next year in the same orchard?

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Prof. Green—There is a good prospect of there being some, but a man who cares for his orchard year after year has less to contend with year after year than if he did not care for his orchard, but as there are orchards closed up on all sides that the insect may not move about very much in the summer, still, in the winter, where have they gone? they have gone to every place they could find protection,—hedge fences,—osage orange is the greatest place in the world for them to get places in; they will move around some in old apple barrels; in the windows of the cellar in the spring you will see them trying to get out, and if you do not have a screen they will get out and they go to the nearest orchard. We have always fought them more or less, but continual care will reduce the amount you have to fight.

Dr. Loope—A year ago last summer in our orchard we had a great deal of trouble with the codling moth; we did not spray, but there were enormous quantities among the apples, the apples were very wormy, without spraying. This last year we did not have any codling moths, at least none of the wormy apples in comparison, no comparison at least to what we had the year before, and I was wondering about that. We had so many the year before, and then last year very little of the effect of them.

Mr. Barnes—I would like to explain the reason for the codling moth leaving the Doctor's orchard. I think they did not appreciate his kind of apples. His apples were so poor that they sought his neighbors' apples that were better.

Mr. Ten Eyck—Would not they be caught by light? Did any of you ever have any experience in that line?

Prof. Green—We have a large collecting lamp,—Australian lamp,—with a bright blaze that could be seen for a mile, and we used that for the purpose of collecting insects, and we found they did not come to the light very much, and those that do come are the male; the female is busily engaged laying eggs and the males are the rovers and they come to the light, but the females do not come.

A gentleman just asked me about the aphid plant louse on the plum leaves, and on apples and cherries, and so on. A very weak kerosene emulsion will kill them readily; spray with that, or strong tobacco water. Just take ordinary cheap tobacco that

you can buy at any cigar store, boil that up until it has a good rich color and spray that onto them. You will have to get at that early, as soon as you see the little fellows at work, because the leaves curl so rapidly that you can not get the spray on them. Spray from the tree out, as well as from the outside in.

Mr. Barnes—I would like to ask if there is any danger of those San Jose scales leaving the branch that he has brought them to us on. I would like to inform the Professor that some of us have paid from \$5 to \$25 apiece to go around and say that we have not got the scale. We are much obliged to the Professor, but we hate to have him leave the scale with us.

Prof. Green—There is one thing in the history of the scale that, had you known it, you would not have asked the question. This insect at this time of the year has no legs. The peculiar thing is that the female gives birth to from 2,500 to 5,000 living ones, and five and six months after they are born they crawl around in a lively manner, then stick their beak into the limb and shed their skin and their legs at the same time, and after that time have no locomotive power whatever, and at this time of the year they are in that condition.

Mr. Kellogg—Right at this point it is proper to score the reporter that put it in the papers yesterday that we have the San Jose scale in the state. I think we do not have it in any nursery in the state, it has not been reported so, and yet the reporter yesterday put it in that we had the San Jose scale.

In connection with this oyster shell bark louse, I would like to ask the professor if we can not spray for him soon after he is hatched in June and get him better and more certain than any other spray earlier, while he is dormant?

Prof. Green—That hatches in June with you, does it? It comes out in May in central Illinois. Yes, just any time after he has come out, use a pretty weak solution of common kerosene, watching it, or you will kill the leaves in your tree.

Mr. Carpenter—I would like to ask if there is no danger of getting this San Jose scale from fruit shipped in from other places? This winter I was unpacking a box of oranges, and there were quite a good many of them, the skin was covered with

a scale insect. . I never saw the San Jose scale, but it resembled the bark louse a great deal.

Prof. Green—The chances would be like this. It is along to the end of May, or pretty well into June before you notice the first young ones coming from the old scale, and you would have to arrange to have your apple peels, or your orange peels, lie close to a tree,—so close that it would touch the bark of the tree, and you would have to preserve that peeling or orange rind until the female would have time to develop her progeny and give birth to them, and they would have to be close enough to the tree so that an insect as small as a chicken-louse could climb from them to the tree.

Prof. Taft—You need not have any fear from the orange scale referred to. It is very much like the oyster shell scale of the apple; it is a closely related species.

Prof. Goff—I have noticed repeatedly during the present winter that apples, especially the Rhode Island Greening variety, appeared, by looking at the calyx end, as if they were badly infested with the codling moth, and yet when you come to cut the apple open, there is apparently no damage to the fruit, no evidence of any recent injury. I would like to ask what insect may have caused that?

Prof. Green—Sometimes what we call our green fruit worms have begun work in the calyx of the apple and then stopped, and it is very possible and quite probable that it was some of those common apple worms.

Prof. Goff—In one barrel of apples, I think, over one-half of the apples appeared as though they were wormy by looking at the blossom end; sometimes a whole calyx was obliterated; I cut into a good many of them and yet I found that none of them were infested.

Prof. Green—It is possible that the second brood would begin to feed in the calyx end and not enter the apple, becoming sufficiently well developed to cut the worm off.

Mr. Hatch—I understand that the real difference between the San Jose scale and the others, and what makes them specially dangerous, is its tendency to breeding, breeding continuously all summer, and it does not stop, like the others.

Prof. Green—Yes, four broods of them.

Mr. Toole—I hope that all those present will continue to be as wide-awake as we are today, to the extent of putting into practice the advice we have received. I hope this will be one of the first papers to appear in the Wisconsin Horticulturist, and I trust we shall all bear in mind the necessity of doing missionary work along this line. Now I think it is pretty well settled that we are going to make a show in the Pan-American exposition, and while we are hesitating, saying that this is going to be an off year, in my experience the codling moth has been more to contend with than any off year has ever been.

The President—Perhaps we had better take up strawberries now.

Mrs. Treleaven then read paper prepared by Mr. Laiten:

Mr. President, Ladies and Gentlemen:—Why I was assigned this subject I do not know, but I will try to give my views.

Taken from a strictly money standpoint I do not think the farmer can raise a given quantity of fruit as cheaply as it can be bought in the city markets, but there is something more to be considered than the dollars and cents. The desirability of having an abundance of all kinds of small fruits and apples all will admit; the beneficial effects of fruit upon the health of the consumer is universally acknowledged.

The expense and labor of spraying, of fighting the bugs and worms, the frosts, the blight and the thousand and one evils one has to contend with is enough to deter many from raising fruit and to cause them to say, "It is cheaper to buy fruit than to raise it." But if it has to be bought how many there are who do not have it,—not that they will not buy it, but there is no opportunity.

When the middle of June comes and the wife or daughter comes in with the first half dozen strawberries, how glad we feel that the berries are almost ripe. In a day or two we come up to supper and how inviting the big dish of strawberries with the accompanying sugar and cream is. How we relish our supper after the long hot day in the fields. In the morning we have them again, this time with the dew still upon them, and dinner

time is eagerly looked forward to, for there will be shortcake or that dish all Yankees enjoy—a pie.

Thus it is for days and weeks, and when the strawberries are gone the early raspberries are ready for our table, and so on throughout the season,—strawberries, black and red raspberries, cherries, currants, gooseberries, blackberries, grapes, plums and apples, and what a feast we have had of them all. How the little faces grow ruddy and eyes grow bright as they watch the fruit ripen and enjoy the apples. We see them any time we steal time from our work to watch them in their play with a big red apple clasped tight in their chubby hands.

This summer the drought made sad work with the berries and we only had a few from our garden. When we went to town we bought a few boxes, but we missed having them always, and most of all, having them fresh.

The farmer living two, three or five miles from the market can not go to town every day for berries, and if he could, the berries are stale, having been picked the day before. At this season the horses are always busy in the corn, the hay or the harvest field, and if there is an extra horse the wife or daughter is too busy to go to town for berries; but if there were lovely big ripe ones in the garden they would find a half hour to pick enough for supper, and when one has had them fresh how stale those from the market seem.

So I say, get a few plants of each kind of a good reliable nurseryman, plant them in a few long rows, so as the work can be done with a horse and cultivator, care for them in a proper way, fight bugs and worms and weeds and get your pay, if not in dollars and cents, in the enjoyment you and your loved ones have had in the home you have done your best to make attractive and in the bright happy faces around you.

The President—We will now take up strawberries, and some of the new varieties, by Mr. Geo. J. Kellogg.

NEW STRAWBERRIES.

By Geo. J. Kellogg, Lake Mills, Wis.

Mr. President, Ladies and Gentlemen:—In presenting the newer varieties of strawberries I shall go beyond my own personal observations, but will give none but what are vouched for by our best authorities.

To prove the value and adaptation of new kinds it requires at least three years' faithful trial; the everlasting dollar is so prominent with every one who has a pet variety to put on the market that it requires the utmost caution in selecting these kinds that have been petted from the first. We all want that variety that will outgrow the weeds, stand any drouth, protect itself for winter, give the earliest, best, biggest berries in greatest quantities and last the longest.

We often discard old standard sorts, hoping to get something better in the new, while it would be wisdom to stick to the best-paying kinds. We all want something new, and we all like to be humbugged. It does seem to me our State Experimental Station could save us thousands of dollars every year in testing the new varieties of strawberries. If the state can not attend to it, let some private individual be appointed by the state authorities to carry on these comparative tests. Those who have promising kinds to put on the market are anxious to put them when they will get careful tests and true reports, and at the same time be protected in their interests. In this way we should get two years advanced knowledge of the new kinds.

Varieties.

Most of which are comparatively new:

August Luther (H.), earlier and better than Michels, good size, dark, firm and productive.

Bismarck (H.), very large, more productive than Bubach, light, soft, excellent for home use and near market, better than Bubach every way.

Bobolink, a week earlier than Michel, firm, very large, good quality, excellent market.

Brunette (H.), best of all in quality, too good to sell, vigorous and productive.

Bush Cluster, habits of Earle, high growth, strong stems, needs no mulch, early, large, firm, productive.

Bennett's Seedling (P.), if properly pollenized, very early and very late, strong, deep rooting, bright scarlet, can be left after ripe a week on the vines and then marketed.

Carrie, seedling of Haverland with all the parent's good qualities and much firmer.

Cobden Queen, productive, firm, medium, red all through and desirable.

Carmi Beauty, best big berry for the farmer and family, stands drouth best of any in one hundred kinds, very valuable for near market.

Senator (H.), best all around berry ever introduced; at the head of that class of Wm. Belt, Nic Ohmer, and Sample, not as large but every way better, perfect, hardy, productive, stands the most usage and comes out on top, size and color like Warfield and better keeper, not a show berry but a stand-by.

Downing's Bride (P.), much like Jucunda, productive, large, quality No. 1, home, market and show.

Darling (H.), twice as productive as Michel, larger and full as early, equals any in vigor.

Emperor (H.), origin Canada, one writer says can't get any more in a box than hens' eggs, another puts it at the head of the list except Margaret, vigorous, healthy, productive, handsome.

Empress (H.), another fancy berry, superior flavor, a great favorite with the pickers.

Excelsior (H.), three days earlier than Hoffman or Michel, twice as healthy, vigorous and productive, and one who knows planted 100,000 of this kind alone.

Echo (H.), *the table berry*, best and richest of all strawberries, large, productive, mid-season.

Gladstone (H.), large as Sharpless, better color and quality, early, vigorous and healthy.

Gertrude (H.), medium early, large, scarlet, firm, vigorous, healthy and reliable.

Hero (H.), large, firm, red through and through, extra quality, plants only one dollar each.

Hunn (P.), best in twenty varieties for canning, one of the latest known, large, dark glossy red berries, flesh is dark and good.

Johnson's Early (H.), a seedling of Hoffman and Crescent, earlier than Michel, equal to any in health, vigor and productiveness, best early in New York market, fair size, long, red. Mr. Davis bought and planted 40,000 for his own growing.

Jerry Rusk (H.), while not new it is one of the best and most productive of large berries.

Klondike (H.), very large, late as Gandy, not as handsome but a surer bearer and more productive.

Livingstone, seedling of Warfield and Jessie, vigorous, healthy and beautiful.

Long Jointer (H.), a great improvement on Beder Wood every way. This is an Iowa pet and not yet on the market. We have it on trial. It is very vigorous, healthy and bids fair to outrival its parent.

Margaret (H.), some extensive growers put this at the head of the whole list. Season medium to very late, very large and quality the best, firm, healthy, vigorous and productive, size and beauty unsurpassed.

Morgan (H.), vigorous, productive, large, No. 1 for beauty, flavor, home and near market.

Manwell, large, late, dark red, good and productive.

Maximus (H.), greatest and most beautiful of all strawberries, excels in all points, the most striking variety in all Hale's collection.

Michigan (H.), late as Gandy, firm and handsome, deep crimson, high quality, best on clay soil.

Marie (P.), seedling of Crescent and Cumberland, having best qualities of both parents, size of Glen Mary, productive as any, most attractive of fifty kinds, first quality, full size to the last.

Mammoth, wonderful size, perfect in form, color and high quality.

Nic Ohmer (H.), admitted by most to be the king among strawberries, a giant in size, the greatest success grown in hills, always perfect, a success on nearly all soils, delicious flavor, a good shipper, No. 1 for market, home use or exhibition, some prefer this to all others.

New York (H.), from Tompkins Co. This has never shown any weakness, it won the hundred dollar prize over Glen Mary, very large, immensely productive, good color and flavor, of the greatest vigor, a seedling of Bubach and Jessie raised by Miss Gates.

Parker Earle Improved (H.), seedling of Earle, makes runners more freely, more productive, late, better flavor. L. J. Arnout, the originator, picked at the third picking 11,968 quarts from two acres.

Paris King (H.), extra pollen producer, very large, firm, does equally well north and south.

Parson's Beauty, a model grower, enormous bearer, large, showy, red, best for market.

Pride of Cumberland (H.), more productive than Gandy, will ship from Florida to Boston, one week earlier than Gandy, will succeed on light soils when Gandy fails, large, firm, makes more runners than Bubach, equally as large, bright red, very productive.

Ruby (H.), red all through, productive, best quality, firm, good keeper. Judge Miller of Missouri says it is the best of one hundred varieties.

Ridgeway (H.), very large and firm, a fancy variety for amateurs.

Rough Rider (H.), originated in Oswego Co., N. Y., seedling of Bubach, Gandy, Rusk and Eureka, very late, ripens nearly up to August, very firm, large as Bubach (keeps a week), more productive than

Glen Mary. It was shipped 350 miles July 12th and sold at 12c., "the best berry on earth."

Repeater (H.), a big crop in June, commanding the highest price, very large, glossy crimson, delicious flavor, manure applied after the June crop brings a paying crop in September and October.

Sample (P.), perfection in plant and fruit, not an imperfect berry, very large, late, enormously productive, vigorous, dark, firm, best market berry ever grown, one grower paid \$200.00 for one thousand plants, origin Massachusetts.

Salem (H.), early, large, productive, glossy red, firm, no rain for two months and picked twenty days.

Seaford (P.), equal to Bubach in size, more productive, firm, early and best quality.

Sunshine (P.), the great, late, fancy strawberry, market or home use, bright color, high quality, flesh red and luscious all through, five times as productive as Gandy and sells six cents higher.

Twilight (H.), this is the most profitable early strawberry grown, and planted with Warfield it will double the fruit of Warfield, two days earlier than Michel and twice as productive.

Tubbs (H.), of the Crescent type, but holds its size to the close of the season, fine market.

Up to Date (H.), productive, good size, firm, red all through, in a wet time does not rot on the vines.

Vories (H.), big, productive, vigorous, No. 1 in all respects, stands depth best of any.

Washington, great, claims the biggest and best of everything.

SELECTIONS.

Earliest—August Luther, Bobolink, Darling, Excelsior, Johnson's Early and Twilight.

Latest—Klondike, Margaret, Manwell, Michigan, Rough Rider, Sample and Sunshine.

Best—Brunette, Downing's Bride, Empress, Ruby and Seaford.

Home—Carmi Beauty, Bobolink, Senator, Echo, Hero, Emperor, Margaret, Maximus, Michigan, Nic Ohmer and New York.

Biggest—Bismarck, Emperor, Gladstone, Hero, Klondike, Maximus, Marie, Mammoth, New York, Nic Ohmer, Rough Rider.

Mr. R. M. Kellogg (Three Rivers, Mich.)—I come to you today in a high official capacity; I am an ambassador, minister plenipotentiary and envoy extraordinary, to bring the greetings of the Wolverines of Michigan to the Badgers of Wisconsin. I

bring you the greetings of our State Horticultural Society, of which last year I was honored with the presidency. We are greatly surprised to see your excellent exhibition of fruits; we thought you were back up here in the woods and did not grow fruit to any extent, but we find your enterprising Horticultural Society has developed so that you are likely to become one of the leading fruit states in the Union. We congratulate you on your success. We over in Michigan brag about our great peach belt, the greatest peach belt in the world, and as a look into your healthful, vigorous faces, I come to the conclusion that this is the great pie belt in the universe, that you eat more pie than any other place in the world, that you enjoy a good many good things of the world, among them being strawberries.

I do not know who drew out the topic for me to speak on to-day, but it is fancy berry growing, and that is the pet theme of mine.

Now the first essential in fancy berry growing is enthusiasm in berry growing. A man who can not go out on a cold day, way below zero, and shovel down manure and cart it onto his ground, and take absolute pride and joy in his work, early and late, never can grow fancy berries. I have been known as an enthusiast, I may say, as an enthusiast with a pedigree; I hear a great deal of laughing about that, nevertheless I am free to state that I am an enthusiast in this and enjoy my work, and it is one of the happiest things of my life, one of the things that really affords me great pleasure, to know that I can spend my old age among fruit and flowers. If you can not work up this enthusiasm, you can not grow fancy berries.

To grow fancy berries is simply to give the plants a chance to do their work. Now, first I wish to speak of the soil, and I do not care to spend but just a few moments on this soil. The soil must be rich and the plant must do its work underground, and hence must be properly fed and groomed and stabled and put in proper physical condition.

I make a practice of planning all my work, and always carry a perfect picture of my farm about three years in advance. I can tell you instantly what will be grown on every piece of ground three years from this time, and most of it four years,

indeed; we make a long series of rotations and so we fit the ground carefully. I do not like to put manure on the ground this winter and settle it in the spring. Sometimes we have to do that, but I prefer to put a very heavy coat of manure on the ground and then in the spring mix it up with the soil and sow it to corn or cow peas. I used to use rye, but I did not like the result, because it did not shade the ground sufficiently to destroy the weeds. Then I sowed corn broadcast. This comes up, and as soon as it gets above the ground, indeed before that, I go over with a weeding machine and destroy the first germination of weeds, and it, the corn, comes up and shades the ground very densely. Then I have the finest mulch in the world for mulching strawberries in the fall and eventually work it into the soil so as to get a large amount of humus. In the fall of the year I like to put on 50 bushels of wood ashes to the acre to soak in during the winter. I never plow ground in the fall. I used to do it, but I graduated in that. I want the ground to remain just as it is. If you plow in the fall you bring the soil grains in contact with the atmosphere and much of the plant food becomes soluble, and, having no plants to take it up, it washes too low or goes to the sub-soil. Plow in the spring, and when I say "plow" I mean to plow it. I usually go over my ground before I set the plants, about 12 to 15 times. I plow it and re-plow it and cross-harrow it and work it down hard. I want the soil grains rolled down hard. I do not mean that I want them packed; I am very careful not to work the ground at all when it is wet.

Now I want to talk a few moments about plants. I propagate my plants with great care, from special plants. We have been told there was no such thing as variation of plants propagated by buds, and consequently all plants so multiplied must always remain identically the same. Now it is a matter of fact that no two of you ever saw two plants look alike, or behave alike. You simply took it for granted that they would not vary.

I select the best variations and as perfect specimens as I can find. I urge you to grow them, in special beds expressly for plants, from specially selected plants. Now the variation of plants is not so much in the type as it is in the physical condi-

tion of the plant. You were told here this morning by this gentleman that read that excellent paper, that you must not go to the old beds, must not take exhausted plants; it has been the practice of fruit growers to do this for years. One of the most important variations that we have is to have a plant vary in its physical condition. You never saw two plants bearing just alike. I remember the first time I went into the berry business.

I had a failure of health. I had consulted eminent physicians in Philadelphia who told me that my only hope of restored health was to go out and breathe God's free air in the open field and enjoy fruits and flowers. He said, "I can give you no chemicals that will do you any good; go out into the field." And I became enthusiastic and I got rid of that pain that had racked me for years.

But the first year I said, "What is the trouble?" There is something wrong here. I can see stretches here, some places of 5 feet, 10 feet, 15 feet, where these plants are not bearing or producing the same kind of fruit." I knew nothing about fruit growing. It was new to me. That was 17 years ago next summer when I harvested my first berry. Now when I came to trace it up, I found these plants had been taken alongside the row in the usual way, and in doing that he had got plants of different physical condition. I afterwards went to the man of whom I bought the farm and said, "How do you get your plants," and he said, "We usually like to take them from plants set the last spring, if we can not do that, we get to the old bed. I found that the year before he had used about half of his plants from the old bed and so he had part of them new and part of the old bed, and then the next year had taken the plants indiscriminately and there was the greatest difference in fruitfulness.

I take plants that please me most. I never try to produce a new variety by bud variations, although I am satisfied this may be done, because if you get a variation sufficient to make a new description you have a new variety and it makes no difference how it is affected. Now my argument was this: No matter what this variation may come from, no matter what it is, if it has lost its physical condition to produce fruit, for you must bear

in mind, whenever a plant or tree produces fruit, it is simply multiplying its species, and the seeds are nothing more than the eggs of the plant, and the fruit only develops as a substance for it to grow.

Now I began by selecting a plant that pleased me most, both in foliage and fruit, and those I grew in a special bed. I soon found I was getting a remarkable crop of berries, very uniform in productiveness all through, and not only that, but they were loaded up, and I made some big money. People went quite wild over them and paid fancy prices to get them. So I urge you, in preparing your plants, to look somewhat into the history of the plant itself, and to take plants which are in perfect physical condition, especially as to seed production.

The plant propagates itself in two ways. It puts a germ blossom, a protoplasm, through two agencies, the father and the mother, into seed, which is the egg of the plant. Now this is the most devitalizing process of any thing the plant is ever called on to perform. You have been talking about pruning. What for? Why, you simply want to preserve the seed bearing part of the tree in order to get the fruit flesh that the seeds grow in, yet this fruit flesh will not develop unless there be vigor in the seeds. I do not care how much you manure and cultivate, if that tree is devitalized in seed bearing, it will not produce the fruit flesh. Many of the small berries are due to the lack of seed bearing power in the plant. You fail to get, either in quality or texture of the fiber of the fruit, the desired quality that you wish. So I urge you then, when you see an exceedingly good limb on a tree, to propagate from that limb, or if you see a plant that is exceptionally good, you want to propagate from it just as you do when you breed your animals. What is that chicken show down there for? To show what magnificent specimens of poultry can be grown by continued selection and great care and prevent the excessive breeding that always degenerates, either in the animal or vegetable world.

Now if you continue year after year to select that plant which makes the greatest amount of foliage and roots your ground will be occupied with plants that have no seed bearing power; they have lost it, and their whole energy goes to build

up a big plant. So it is not the big plant that always counts, or the plant making the most robust foliage. You want a plant that has foliage, and at the same time the seed bearing habit, and will devote its whole energies to the development of fruit instead of useless runners. In doing this, you must let the plants fruit; so when I find an extraordinarily good plant, I mark it, and let it fruit, and to prevent the pollen exhaustion, I remove about half the blossoms on each stem. You were told this morning that every bud is an individual by itself, and it is not enough that you take off one fruit stem and leave all the others; I am careful to prune each fruit stem. I let these plants fruit and then I am able to determine the texture, color and quality. You must remember that in breeding plants by runners, you simply divide the protoplasm, that stuff in which the principle of life resides. It is exactly the same as seeds, and is capable of developing in the same way under proper conditions.

I take runners from these plants and I grow them in special beds by themselves, and then I have eliminated the weak plants and I have those that will do my work.

I like to have the plants mulched when the ground is frozen heavily in the winter to hold the frost in the ground late so the plants will not start to grow. I set my plants while they are entirely dormant. I do not like to take them up and set them so early as to have heavy frosts afterwards, but if you can keep the plants dormant by mulching the ground thickly, you should not lose one plant in 10,000.

There are four ways of growing plants: One, in the hill, in the hedge row, the narrow matted row and the wide matted row.

A plant grown in the hill, if the plants are in perfect physical condition, when you cut a runner it should grow a new plant on the side of the old plant called a crown, and these plants will arrange their foliage themselves, if they are not interfered with, so that the sunshine should strike every leaf. We all know that a plant can not do its work unless it can have full sunshine, neither will it make fruit buds. Prof. Goff said this morning that you could not get strong fruit buds in the darkness; that you must have sunshine. You people who have been in the habit of growing berries in the matted row know you find

very few large berries in the center of the row. You will find your large berries always on the outside of the row, and if you ever do get a big berry in the center of the row it will be one that is isolated from the others, so that it will drop its foliage and receive the sunshine on the crown, where the bud is to form. I would not grow berries at all if I had to grow them in wide matted rows, because you never can get fancy berries. My way is to grow them in hedge rows. If your ground is very rich, and you want all big fancy berries, it will pay to grow in a hill. If you have a horse that will work in a narrow row, put them about 30 inches apart, perhaps 34 to 36 inches will be better with the average horse. I would set plants from 30 inches to 3 feet apart, according to the ground. On level ground you can set them closer than on hillsides. Then I set plants according to varieties. For instance, a variety like Haviland and Warfield and Crescent that makes runners freely, I set them further apart. I layer them so they set a plant about every 8 inches,—I do not like them closer than that. Never let the foliage of one plant shade the crown of another.

I cultivate very frequently and use a disk runner cutter that has leaves and I make it very sharp with a file. It would not work so well on stony ground because it would soon become dull. I attach this to a garden wheel hoe because I can do better work but it can be attached to the cultivator. I prefer to cultivate one acre carefully rather than two acres slovenly. Then in the fall I get that great stand of wonderful big plants and every plant next spring is red with berries. You would be amazed if you could see some of those plants when they are grown on our rich ground, properly manured, with every one in physical condition to do its work; it will make your eyes bulge to see the windows of berries that will lay along each side. A picker sits down and does not have any hunting to do, and you can get your plants picked for one-half of what it would cost you when grown in any other way. A picker can pick twice as many berries from those rows because they all have sunlight, and they color up nicely, and they are finer and better, and she can see and pick them off as fast as she can make her hands go. They have plenty of root pasture and resources and so do not become exhausted.

I want the land rich to grow them this way because they won't stand up. You might let them make runners but they will not have the quality in the wide matted row.

Next best thing would be to keep them in the narrow matted row, perhaps a foot wide. I do not care to discuss the wide matted row, I would not grow berries in that way. There is something to live for besides money. I want to work in such a way that I get a little pleasure as I go along.

Once when I was giving a talk on intensive horticulture, which is a pet theme of mine, a man undertook to guy me a little bit, and he said, "Mr. Kellogg, how many acres of berries did I understand you to say that you set out the previous year?" I said, "Thirty acres,—last year I had forty." "Oh," he says, "much obliged. I was a little in a quandary as to what the difference was between extensive and intensive horticulture. I see, thirty acres of strawberries is intensive growing; I would like to know what extensive strawberry growing is." I said, "You need not worry about that. If you came to my place you would often see 20 to 30 men right along in a row, each one required to do his work perfectly and behind them comes the foreman, going along, looking at every row, carrying his hoe, just simply giving the man a tip about cutting up some weeds that are left, and if a man can not hoe his row right, he gets his tip for good." We used to run our charity and business shop all in one institution. We do not now. We have separated the charity shop and the business house; they are run in two separate branches. If a man can not do his work right, we fire him.

We cultivate till the fall rains begin. We are not so particular about keeping off all the runners late in the fall. We would like to have the buds stop forming about the right time; the strawberry fruit buds begin to develop early in the fall. I want the plant to grow very slowly there; I put on mulch late in the fall. Our strawberries now are all under a mulch of corn stalks which I sowed broadcast expressly for this purpose. Let it stand till it gets thoroughly dry. I sow the corn on ground to be set to plants the next spring.

Now I want to speak about the propagating beds. When you set your plants on the propagating bed, be sure and get

them far enough apart so that they will not be crowded any more than they would be for fruiting, let them run over the ground in all directions, so that each one will occupy its own territory and in its growing season it will preserve all of its habits and its best qualities; do not crowd them together in a solid mat. If you do you will destroy the seed bearing properties. Keep up the selection, and see that you spend your costly labor on growing berries instead of useless runners.

Mr. Barnes—Can not you tell us something about the varieties?

Mr. Kellogg—That is much like telling a young man what kind of a wife he should get. You have got to do a little courting your own self.

I have people come to our place, and we have our varieties all set along on the same ground, two rows of a kind, so that we can make perfect comparisons. Now I have my idea about which of those is the best variety, and visitors come there and one of them will get quite wild over a variety that others will not notice. He is just like the fellow selecting his girl; he don't know why; but he wants her; that is all there is to it. You can not tell a man what plants to set. Let two growers send to a nursery man and get twenty varieties, if you please, and you put them on two farms, when they discuss varieties and you have a quarrel right off on which is the best variety. That is the difficulty.

Now my distant cousin here, George J., has spoken about an hour on describing those varieties; it is just simply impossible to describe them. I will tell you this: You put that question in another way and I will answer. You ask me what is the most popular variety all over the country, the variety that the greatest number of people is pleased with, or that the most people speak about favorably.

Johnson's Early was originated down on the Atlantic coast in the south, and it is an extremely early berry, and it became very popular. It commanded an extra price in the New York markets. It is crowding out all the other extra early sorts. Now down in Arkansas they started on the Excelsior; that is one of the leading berries in that country. I had it on my

ground, and when it was mentioned this morning by Mr. Kellogg I felt like applauding, for certainly on my ground it showed more than double the fruit and was more than four days earlier than the Michel's Early. It is a better berry.

The Warfield is the most extensively planted berry that ever has been grown. It has failed on some soils. I will caution you particularly about light sandy soil; I have heard many complaints that it did not root deeply on light sandy soil. It is like the Parker Earle, it loads up so much it can not carry all to maturity.

We fertilize it with Tennessee Prolific. The Haviland is not of the highest quality, but is one of the most productive berries ever produced. It ships fairly well in cool weather. I would not sell to the stores. I want to control the price of berries. If you have got fancy berries you can do it; if you have common stock you have to take what you can get.

Mr. Barnes—Give us the two most popular late varieties.

Mr. Kellogg—The Bubach is a late berry; that is one of the very best. Then there is a new berry called the Seaford,—I paid ten dollars a dozen for my first plants of this variety and sample and I am very enthusiastic over both of them. I do not know which one I would choose if I had to discard one or the other. I want to tell you that the Rough Rider is coming to the front. That is the very latest we have.

Mr. Edwards—What implements do you use in setting plants?

Mr. Kellogg—I have a kind of an augur which looks like the wheel of a propellor on a steamboat; it has a handle, you give it a whirl and it digs out a hole and leaves a cone in the center, pick up the plant and turn it upside down, or give it a flip and set it with the roots spreading around the cone and then throw the dirt on it and tread it firmly and the roots are left near the surface as they naturally grow so they have sunlight and warmth and they will make the greatest growth. I have found at the end of two weeks after they were set that the plants set on the cone had twice as much new root as one with the spade. But I can not use that machine on all my ground because of this sowing of corn and there are leaves and a large amount of rubbish in the soil which tears the cone to pieces. When you put in a

spade you have to rub it back and forth to clear it and you make a glazed surface, the roots can not come through it; it bakes the surface, and you can see that crust two weeks after you set it, if not longer, you will find that much drier.

Dr. Loope—Would you recommend a fertilizer for Warfield?

Mr. Kellogg—The Tennessee Prolific, that suits me best, the Tennessee is very popular. I have used Bederwood; that does nicely. Sometimes we get a variety that we have to leave the row and pick the pistillates by themselves, but if it blooms at the right time and the pistillate bloom is in good condition, you get good results.

Mr. Barnes—In what proportion do you set them?

Mr. Kellogg—Two rows of pistillates, and one row of the perfect flower. I use pistillate altogether for fancy berry growing, using perfect flower only for pollen. As a rule you will find the pistillates more productive and will withstand drouth and frost better.

There was one variety mentioned here this morning,—Senator Dunlap. I am very enthusiastic over that. The Dunlap was sent to me for trial before its introduction. I had it two years, and I should be very loathe to discard it. It is a little high priced for general planting, but I should certainly get some of them for propagation. Another variety that has come into bearing lately was sent me four years ago. It was introduced from Maryland and is called the Kansas. I want to say to you I have had that berry on my ground for four years. It has attracted much attention, I tried to get control of it for nursery purposes, but I did not succeed, but I consider both of these among the most promising sorts I have had. The berries of the Kansas are large, somewhat of the Crescent type but larger, and much brighter color.

Mr. Hatch—I want to know if you have told the audience anything about the sale of those fancy berries in Paris, France, that you told me about. Tell the whole story.

Mr. Kellogg—I have it as I jotted it down. While I was in the Pomological building at Washington talking with Prof. William A. Taylor, who had just returned from Paris, he gave me some figures of sales of fancy berries which were sold at

auction. I give them to you just as he gave them to me. I hardly thought it would be possible to induce any live persons to pay such prices, but this was in Paris. The berries are picked by stem without touching them and laid on a clean leaf, and put in trays, and while we have crates in the markets for our fruits, in Paris they are sold in trays. Now these are the figures:

One tray containing two dozen berries sold for \$1.60 in our money. One dozen berries sold for \$3.20; 48 berries in one tray sold for \$2.70, and then there were two dozen berries in one tray sold for \$3.10. Another one dozen berries sold for \$1.80. Now Prof. Taylor saw these berries sold, and he was told they sold them right along in that way, every day during the season.

Now, Mr. President, I have talked to you somewhat at random, I seldom jot down anything, because I prefer to speak in an off-hand way. I want to speak a little about tillage.

I cultivate my strawberries on the day they are set, always. I have the cultivator in the field, when the setting begins. I cultivate them every four or five days all summer long. I am known as the cultivator fiend, as well as the manure fiend. I use a Planet Junior cultivator with 12 teeth, with a pulverizer attachment. Moisture is the great element in strawberry growing, whether you are growing the first year of the plant to fruit next year, or otherwise. I have put in an irrigating plant. I have a 25-horse engine and have spent considerable money in putting heavy iron pipes and have a complete irrigating outfit, which, with the aid of two men in the field and one at the engine to look after it (it is a 25-horse gasoline engine), I have to raise the water 30 to 35 feet to a place on the farm higher than all the other places on the whole farm. Our capacity, with the means that we have of measuring water, is about 14,000 barrels, per ten hours which we can handle and distribute over the farm. We run the water through ditches, so as to economize, and immediately cultivate. We use this on the propagating beds, because here we can not cultivate on account of allowing the plants to spread out in every direction so as to get as full development as possible. Last fall we only irrigated three weeks. We had an excessive rain in July. In the spring

we had a little rain, but the runners had not got started and we kept the ground mulched by cultivating.

Speaking of moisture of the soil,—when you go home take a gravel stone and drop it on a wet cloth, you will see how quickly the water will surround it. There are two forces of molecular attraction which causes the water to draw up on the stones. The other is that the water creeps up by capillarity. When you take your coffee, in the morning, you touch one corner of a lump of sugar in the coffee, and see how quickly it comes up in the sugar. Water draws up in the soil in the same way, you simply cultivate to separate the soil grain so far that the waters can not rise by capillarity. That is all cultivation does. Don't you imagine you can make ground wet by cultivating it. You can not do it. The ground is dry and will stay dry until you have put more water in it. You cultivate to prevent the water already in the soil from getting away.

Mr. G. J. Kellogg—You spoke of the greater facility in picking from these hedge rows. What is the best day's work of your best pickers?

Mr. R. M. Kellogg—I have had them exceed on those rows 300 quarts.

Mr. Hatch—Mr. Kellogg, you have not told half the story. I want you to tell about selling these fancy berries that you grow for the market there in Michigan.

Mr. Kellogg—We had 16 groceries in Ionia and they all had telephones, and they made up their minds in the morning that the berries should be so much, and they always made two cents a quart; if they paid 16 they sold for 18; if they paid 3 cents they sold them for 5.

I stood that thing for two years, and then I said to them: "Now, I will not stand this thing any longer; you fellows go to work, and when you see me coming with berries I know some of you put your price card on two or three cents less to jew the market and beat me out of a fair price. I then had a family ticket printed and sold direct to families and bought berries at a higher price and shipped them out of the city and so compelled the dealers to pay what the berries were worth. I shipped berries I purchased north and got a good price on them and maintained the price on my own growing. Sometimes you

get the reputation of being honest by a trick, and I confess to have played the trick. We had a deacon who put the big berries on the top, and little berries in the bottom and we always called it "deaconizing the berries." I went to work and put all the big berries in the bottom; and faced the berries by turning the points up so as to make them look as pretty as possible. Well, the second day every old lady in town was trotting up and down the street telling what an honest fellow Mr. Kellogg was, and I had all the trade right off. If you people will go to work and do this and grow fancy berries and sell them to people, they like to pay you a good price. I will tell you a little controversy I had with a customer. Mr. J. E. Just was cashier of the Ionia Savings Bank, and he was afterwards bank commissioner and one of the finest business men in the town. I supplied his family with berries, and when he got my bill it was \$18.72 for what berries his family wanted to eat during the summer time. I went up to the cashier's desk and threw down the bill, and with a great deal of pretension I said, "I want that bill settled." He is a great deal of a wag, and he looked at the bill and he looked at me and he said: "Kellogg, you are a highway robber, the idea of your coming in here and charging me \$18.72 for what berries I want; what kind of a conscience have you got anyhow?" He looked daggers at me, you know. I said, "Have you got through, sir? If you have, I have a little speech to make. I admire your family greatly," I said, "but of all the pigs I ever struck in my life you are the biggest; you are the gourmands of all the gourmands. Now I want you to pay that bill, and I will say to you that is the last, you don't get any more berries out of me." "Hold on, Kellogg," he said, "I will pay the bill," he says, "and if you dare go by my house and not stop with those berries next year I will shoot you on the first street corner I see you; that bill is all right and I am glad to pay; here is your money. Say, Kellogg, I never had so much comfort, so much enjoyment, so much pleasure out of \$18 in my life as I did on that." And that is just the way people feel. You take something extra nice and give them to understand that in order to get it they must pay for it, and there is nothing that puts so much flavor on strawberries as a good big price.

Do not glut the market with a lot of poor berries that nobody wants. Go to work and manure your ground properly, propagate your own plants, for every strawberry grower should propagate his own plants, and if you have got to buy plants, buy them a year in advance, test them, then set out those that please you. If you find the people want a particular variety, or a large number of families, they will pay more for them. My friend is wild on Enhance; I had Enhance for years, but I found the people did not like the flavor. It is enormously productive, that is true, but just simply grow one-half the berries and then insist on the high price, and never mind if somebody else has got twice as many berries only half as good, that does not interfere with your trade at all. You simply have your own customers and get the best families in town and you will get on and make some money out of it.

Mrs. Johnson—I was wondering what would happen if everybody was going to grow big berries.

Mr. Blanchard—I think it would be unfortunate. We can not all have bank cashiers for customers.

Mr. Kellogg—I want to tell you that that was an exception. All the rich people are very stingy, they get rich by being stingy, but the common people will pay the biggest price for any berries in town and if they are nice will have them anyhow.

DISCUSSION.

Mr. Marshall—I just caught Prof. Van Deman going out, and before he goes, I would like to have the Society thank him with a rising vote.

The President—All who wish to thank Prof. Van Deman for his visit and his counsel, will please manifest by rising.

Carried by a unanimous rising vote.

Prof. Van Deman—Thank you. I will see you down at Buffalo.

Mr. Toole—I feel burdened in the question of making a choice of all the good things that have been presented. In fact, I would have much preferred having Mr. Kellogg's own experience.

Dr. Loope—I want Mr. Kellogg to tell me now what to buy.

Mr. Kellogg—After I have had twenty years more experience I can tell you.

Mr. Pendergast—I see you can not go wrong.

The President—I noticed he said some of them were earlier than Michels.

Mr. Kellogg—Two weeks.

A Member—I want to ask what he considers the best strawberry in the market, early?

Mr. Kellogg—The question is, What are the three best strawberries on the market? Well, now, these are new that I have given you. I do not swear to what any of them have said, further than what I have proved myself. I would not want to stop at three. You want an early and medium and late, and one that will have big berries and one that will have bushels, and you can not stop with three. I think the strawberry question will be continued, and when we get to the fancy berries from Michigan in a few minutes, you will know more than you do now. For early that will be standbys there is nothing that exceeds the Wood, that has borne as much as that in the state, for early. If you want a pistillate there is nothing equal to the Warfield, if you want a pistillate, but I will not plant a pistillate, I would forego the privileges of the Warfield, and I would plant the Lovett and Clyde, and if you want it later still, there is nothing that will sell as the Enhance; it is not as good a quality as many, but it will give you bushels; I have had boys come in with 230 quarts in ten hours' picking.

Mr. Chappell—The Enhance is the best berry I have grown for market purposes for a late berry.

Mr. Kellogg—I am glad you said, best for late; it is not good for eating.

Mr. Chappell—I am speaking for the market, for canning, etc.

A Member—For the other fellow to eat.

Mr. Hatch—I would like Mr. Bryant of Illinois to report on the Senator Dunlap strawberry; I think it is known as the Crescent.

Mr. Bryant—We put in the Senator last year, not to a very great extent; but it is in great favor and very highly spoken of

by those who have attempted its growth. They claim it is an improved Warfield, evidently a seedling of the Warfield. It has a great many of the Warfield's best qualities, somewhat larger, as firm, as good coloring, will carry just as well as the Warfield, a little better size and a little stronger plant. They claim that the plant is a little stronger, better grower, but still it makes plenty of plants; the Warfield, you know, makes almost too many and not very strong, but it is receiving a great deal of favor there with us; it has become very prominent, to say the least. Those that know it best think the most of it.

Mr. Kellogg—Do you call it Senator?

Mr. Bryant—Some call it Senator and some call it Dunlap, but I think Senator is the name they will give it.

Mr. Kellogg—I will be glad to place it in the S list, but I do not want the two names.

Dr. Loope—We have for several years used the Bederwood, or the Wood. From almost everybody I get the best annual reports of the Bederwood, but we have only had it as a fertilizer, we never picked a case, we have picked odd berries here and there, but in the spring it lifts its head and blossoms nicely and gives you great promise, and when it comes to fruiting you do not get anything.

Mr. L. G. Kellogg—I can not think that Dr. Loope has the true Bederwood. I think it must be the Vandeman.

Dr. Loope—I bought the Vandeman; it would not do anything.

Mr. Blanchard—Mr. Kellogg, speaking of the early berries, named the Wood, I would like to ask him if he meant the Bederwood?

Mr. G. J. Kellogg—Yes, I believe in leaving off the Beder; there is no other Wood that I know of.

EVENING SESSION.

Wednesday Evening, January 16.

Dr. Loope in the chair.

The Chairman—Owing to circumstances we wish to present one topic here tonight, "The Culture of House Plants," by Miss Miriam Jewett, of Sparta. After that we will turn over the rest of the evening to the Algoma Society.

CULTURE OF PLANTS.

Miss Miriam Jewett, Sparta.

Although I do not intend to occupy much of your time this evening, I find my subject as announced, "The Culture of House Plants," too narrow, and I beg permission to speak of the culture of plants without as well as within the house. Although I may seem to begin some forty leagues away I promise to close with a few practical hints to the amateur from the florist's point of view.

Flowers appeal to us as all beauty appeals. They all speak to us as Emerson reports the shy and modest rhodora of the woods:

"If eyes were made for seeing,

Then, beauty is its own excuse for being."

There is the whole argument,—“If eyes were made for seeing.” The eye demands satisfaction in color and form as the ear demands “concord of sweet sounds,” or the sense of taste demands its own gratification, and woe unto us if we allow this, the highest of the senses, only poor shoddy, vulgar satisfaction. Any organ denied all usefulness will slowly but surely atrophy. The time-worn illustration of the sightless eyes of the fish of Mammoth cave are a warning here. “From him that hath not shall be taken away even that which he hath.”

But there are few, I believe, if any, to whom

“A yellow primrose by the river’s brink

A yellow primrose was to him and it was nothing more.”

There are very few who would not greet it with at least a start of pleasure. Even the man who scolds and fumes at his wife for “puttering about her posies” would be surprised to find how lonely he would be if his garden were bare of blossom form spring to fall. And the toil-worn, heavy-laden woman, why does she put this extra strain on her frail body? It is her effort to come in touch with perfection, to satisfy certain high instincts within her to “hitch her wagon to a star.” In some way to her,—to us all,—the flower epitomizes “this world so fair.” And she would have that great joy of the artist when he sees beauty, first conceived in his mind, given form and substance by his hands and so presented to the world. And then, too, she would have beauty ever near her where she need but turn her eyes from her labor to gaze upon its face. Emerson, with his usual acumen, points out that it is only when we turn from work that beauty makes its appeal to us. He says: “Go out of the house to see the moon and ’tis mere tinsel; it will not please as when its light shines upon your necessary journey. The beauty that shimmers in the yellow afternoons of October,—who ever could clutch it? Go forth to find it and it is gone; ’tis only a mirage as you look from the windows of diligence.”

To the eye a flower is nature’s final crown of triumph,—the “far of divine event to which the whole” plant “creation moves.” I am aware that the horticulturist whose efforts are directed to the fruit bearing plants, and the agriculturist who is always selecting plants with reference to their yielding seed or leaf or stem, as the case may be, will smile at this exaggerated statement of the florist. And the scientist, too, objects. But I stand by my guns. I am speaking of beauty only now. And in its efforts to produce single forms of surpassing beauty nature always gives “the bright consummate flower” the most conspicuous and strategic of positions. All the other forces are so disposed as to give it the prominence it merits.

But it is the recognition of the flower’s undisputed claim to first place and the failure to recognize certain other principles of equal value that leads to much misapprehension of what

true beauty is and of how we shall produce it. When we think of the things we have been called on to see beauty in we would apostrophize beauty as another has liberty: O Beauty! "What crimes are committed in thy name!" A flower must have an appropriate and beautiful setting or it loses its charm. Have you not been called upon to admire a tall lanky geranium, feebly sprawling all over the window, presenting to your view only the wrong side of its leaves, bare of all leaf-covering on its lower extremities, that seem to stretch out and down into indefinite length? To be sure there was a fine flower or two on top. And as the proud grower took it carefully down and turned it around for your admiration, have you never felt like saying, "Madam, that plant is a failure,—a dismal failure. You have given it your valuable time; it has occupied your sunniest window, and now you have not a thing of beauty but an object you dare not view in its entirety. You must close your eyes to half of it."

What is wrong? Where has she made her mistake? She has thought only of the flower. And not the flower, but the plant, is the unit in the plant world. And surely as much pleasure for the eye resides in the shapely plant as in the flower that alights upon it. In place of "a thing of beauty" she has a thing of ugliness that in its pathetic effort to fulfill the law of its being will haunt your dreams with the other maimed, misshapen, piteous forms of earth. The flower, beautiful though it be, can not redeem the ugliness of the plant, for it is always impossible to keep the eye fixed on one point. It will wander. A beautiful flower challenges the eye, but we must not, we can not if we would, forget the plant that produced it and that plant's place in the world of nature and of man.

This placing of the emphasis upon one, and only one of the many beauties that should appeal to us, is the great reason why our sense of the beautiful in nature is so cramped and meager. Although we grant that the flower is nature's final and greatest effort in the production of beauty, still the accessories of leaf and stem in their ever-varying shade and form, of foreground and background, of atmosphere and motion, are capable of yielding much more gratification than the flower itself.

If we would know what are the really great beauties of na-

ture let us ask ourselves what form of beauty is there in "those pictures that hang on memory's wall?" I do not believe if each of you were to describe that picture or sight in nature that has moved you most a single one would name a flower alone. It would be a stretch of glorious autumn colors or beautiful vernal green gleaming with dew-drops, a field of grain bending before the wind, some cool recess in the woods, or the high sloping bank of a lake studded with daisies. If any one should say it was the sight of a single flower or plant that had stirred his pulses most, I think we should find if we inquired that its position and surroundings counted for as much in the impression made as the object itself. The yellow primrose, immortalized by the poet, stood by the river's brink, and I am sure we are justified in thinking it sprang from a beautiful green sward, and doubtless there was a background of darker green foliage, and perhaps over-hanging branches through which the sunlight fell in splashes. For myself the one never-to-be-forgotten picture nature flashed upon my eye was not anything growing in our formal garden, but a glorious mass of wild roses that in childhood's days I came upon down on the bank of the little creek. I went home with my arms full and came again the next day to sit and look, and for years I watched, but never again did nature indulge herself in such a riotous profusion. This was a mass of flowers I admit. But notice, if you please, that these roses were growing in a state of nature and the proportion of bush to flower was, I should judge, about one to fifty, and although they grew in a tangled mass in one place there were many stragglers scattered about on the grass for some distance, and there were the tall alders festooned with woodbine on the bank of the creek and above on the hill the dark pines stretched away for miles. So, although I did not realize it then, now I know that much of the impression was made by the other features in the landscape. Nature, wise old woman that she is, does not spread out all her riches at one time but practices great frugality and ingenuity in their disposition. She places her primroses singly where they will be reflected in the glass of the river, or if in masses there will be a background of dark green and a foreground of green grass. Her

lilies in their stately curtesying always withdraw into the shadows. Her roses always, always grow on bushes. And did you ever think how much more bush there is than flower? But perhaps you think of that

“Dear common flower that grows besides the way,
Fringing the dusty road with harmless gold.”

Yes, the dandelion does grow in masses, but not so lavishly that the fresh green of the spring grass does not over-balance it many times. The golden rod also comes to mind as an example of the massing of flowers by nature. But I think you seldom find it standing alone; it fringes the edge of a wood; it encircles a solitary tree or a mass of green underbrush; the red shumack is quite likely to grow with it in one place and the aster in another. But always the eye has something to rest upon besides the mass of color. And her poppies—did you ever notice how nature places them at the tip-top of long slender stems so that they can nod and beacn in the wind? Nature has at her disposal all colors and varieties of poppies, but do you ever find her bringing together all or many of these variformed and many-colored beauties and putting a fence around them? No; she separates them by the width of the continent and even by old ocean itself. She could, of course, have mixed these varieties and she could have made her poppy-beds square or diamond shaped. But, no; those spots in the natural landscape that hold the eye, remain in the memory and become truly “a joy forever” are rarely any mass of gorgeous blossoms and never a mixture of numerous striking features. But rather some one or two things are so placed as to strike and hold the eye and in the distance there will be a few groups that accentuate the one particular beauty, and above all there will be plenty of room and green,—great stretches of green; nor is the poetry of motion often lacking to the picture.

Thus does nature. But how does man when he would have a spot to rest his eyes upon through the long summer, and to speak a word of cheer to the passer-by? I will tell you how he uses these same materials. First he cuts away every tree and bush that nature left and then he goes out with a string and a rule

and he plants a row or perhaps two or three rows of trees in a parallelogram and at equal distances apart all around his house, so that when they are grown, if you look toward his habitation, you can not see it but you know it is there because of the mass of trees and the smoke arising from the invisible chimney. You can notice in driving about the country that it is very, very rarely that you get even a glimpse of the many beautiful homes until you drive directly under their sheltering groves of trees. And after the trees are planted how does he who would add beauty to his surroundings, proceed? Often he plants a few,—a very few,—flowering shrubs, “bushes.” Probably he dots them into the straight lines of trees. And then he cuts out a flower bed or two in the middle of any small stretch of lawn he may have left, and in these he plants the greatest number of varieties and colors of asters or petunias that a paper of mixed seeds will produce. There he will stop and pronounce it good. I do not think the illustration is at all over-drawn. Those are the usual surroundings of well-to-do homes, unless there is some one in the family who is a “posy crank.” In that case the result is likely to be something like this: She (you will notice that I here change the pronoun) she, too, goes out with her string and her rule and ambitiously selects the one large area of lawn left unoccupied and proceeds to cut it up into triangles, circles, squares, ovals, and perhaps into stars, crescents and anchors. These beds she outlines with stones, boards, shells, bricks or willow twigs. In them are planted all kinds and conditions of flowers. Generally she will invest in packets of flower seeds of mixed colors and each bed will contain the entire range of color to be found in that family. If her strength and courage do not desert her and she has what is generally spoken of as luck, but what, more accurately speaking, is simply “plant sense,” she adds to her botanical collection year by year, and her flower beds increase in number and complexity and jostle each other for room until the grass has almost entirely disappeared from the yard. I would like to confess, lest I seem too critical, that of all these things have I also been guilty.

But you ask, what is it I would have? First, I would cut

down some of those trees, choosing those that will leave gaps that will afford the inmates the most beautiful views of the distant country and those that will afford those approaching the most charming views of the house and grounds. I would like to be able to move many of the rest of the trees around into informal groups, but as that is impossible we must do the best we can in grouping the new trees and shrubs we put out about the old to give as natural an effect as possible. Avoid straight lines entirely within your own domain. Why should your walks be laid out in straight lines? Why? Even a cow knows better than to make a straight path. You who have followed the tinkling cow-bell as the sun dropped slowly out of sight will remember the winding cow-path. Use the ornamental and flowering shrubs more freely. The lilac, the snow-ball, and the rose-bush do not by any means exhaust the list of those available here. Use them generously in groups by themselves or with the trees. And don't forget that some of the most beautiful effects can be obtained by the use of vines, and flowering plants and bulbs. Don't fail to use them, but use them as neighbors to the shrubs and trees. Don't isolate them and don't jam them all in together so that you have a botanical kaleidoscope. If you have room for but a single bed of poppies, plant only the single red ones this year and wait until next year to enjoy the pink and white ones. Put those plants upon which you depend for your supply of cut flowers for the house back where you need not be compelled to view them after their daily decapitation, and put in the places always to be seen from your windows or by the passers-by only those that make a brave show all the season. Don't dig a hole in the lawn for them, but plant them where they will hold some relation to the rest of the landscape. Utilize the angle formed by two parts of the house or the space where a walk divides into two or between the walk and the house. Or fringe a distant group of shrubs and trees on the farther edge of the lawn with something brilliant and showy. Or plant them in a nook among the trees, if they like shade. Some hollyhocks planted in the distance behind a group of shrubs so that only their tall, swaying heads can be seen make a pretty sight.

Of course, it takes more time and thought to plant in this way than it does to go out with a string and plant things in straight rows. And of course you will make many mistakes, but then you will have the pleasure of rectifying it next year, and you will have the pleasure of contributing something to the real beauty of the world and not to the caricatures of it.

I know your eye has often strayed to these flowers while you have been so kindly giving me your attention, and they do speak for themselves far better than I can speak for them. But let me draw them out a little for you. How much of their beauty is due to size and form and color of flower and how much to the swaying stem, think you? There, suppose they were all crowded down into the vase so that only their heads were visible, and suppose the vase were not transparent; what would be the effect? Why, it would take ten times as many to make any bouquet that would arrest the eye, and then the impression would be only of a mass of color. But that is the way our grandmothers arranged their flowers and the way some of their grandchildren do yet. Let me arrange a bouquet for you like one from the old-fashioned garden. There! If I should cut the stems off short that would be like many a bouquet culled from the old gardens in the old days. You need not smile. I have no doubt that many of you have accepted such a one with pleasure and the most profuse thanks.

And now I wish to give very briefly a few general directions for the growing of house plants that it seems to me the amateur is most in need of.

Most people who "love plants" well enough to grow them in their houses make much the same mistake I have already spoken of in gardening outside the house. They have a wrong ideal. They have a feverish and greedy desire to possess everything in the plant world which they see or of which they hear. If they could only take this one principle to live by all would be well: "My object in growing house plants is to satisfy the sense of the beautiful in myself and others." From this principle several others naturally arise. First, I can only hope to satisfy this beauty-sense by having each plant a fairly perfect specimen of its kind. So I must know the requirements of each

plant and see that it has them. Second, there are but a limited number of windows suitable for plants and some of those I can not take away from the family. So there is a certain definite limit to the number of healthy strong plants I can have. And third, if any available windows are not on the sunny side or are sheltered by porches I must not try many of the blooming plants. Palms, ferns, primroses, cyclamen and begonias are about all that I can hope to succeed with. Fourth, I must learn how to perform all the simple operations,—propagating, potting, etc., and I must know something of pruning and much about watering.

Let us then begin with the soil. Don't imagine you must have a different mixture of soils for each plant. I wish to say with emphasis that almost any soil will do for any plant. This has been proved over and over again by florists in different parts of the country. One must depend upon clay, another upon a heavy black soil and still another upon a light sandy soil. But all can and do succeed in growing the same things. If you have a heavy clay soil you must "lighten" it for ferns or primroses, for instance. Mix in some sand or leaf-mold. But, if on the other hand, your soil is light and open you can succeed in growing almost anything in it. Roses really want clay, but if you can not furnish it, you can ram down your light soil in potting until it is in about the same mechanical condition as clay.

Take then any good soil you have. Enrich it with very well-rotted manure. About one-fifth to four-fifths soil is a good proportion for most things. Make it richer for callas, but for geraniums leave it much poorer.

Mix your soil well and see that it is neither too wet nor too dry. If it is too wet it packs too hard. If too dry you can not make the parts cohere however much you may press it. If you find it too dry wet it down a little and then mix until it is all alike. If too wet the only thing you can do is to find some dry soil to mix into it or else wait until it becomes dry enough. It is the worst of mistakes to attempt to handle it at all when too wet. To tell when it is in right condition, take up a handful and press it together. If it is damp enough to cling to-

gether afterwards, but not so wet but that a touch will crumble it up, it is in just the right condition. It is wise to put away in the cellar enough soil of the kind you expect to need to last you through the winter.

And now the plant is to be considered. Seed sowing is an operation described so often that it is surely unnecessary for me to say anything about it. But about making cuttings or "slips" I think many amateurs have much to learn. Here are some branches from which I will make some cuttings. Don't use the whole branch. About two inches is the good length. A long branch is much more likely to wilt. You can tell by trying where to make the cut. Up here it is too soft and full of sap. It would wither away without making roots. Down here it is too hard and woody. Roots would start but slowly, if at all. Use a very sharp knife and be very careful not to crush the stem between the knife-blade and the thumb, but draw the knife across the stem and let it come up against the thumb. Then you will have a nice clean smooth cut. Trim off the lower leaves and if the cutting is too long cut off the top. Always cut just below a joint. At that point there is always stored up more that goes to the formation of roots than elsewhere. But in most cases it is better not to take a long branch. If you watch you can generally take off the side branches when just large enough. They make the best cuttings in most cases. If taken off with a ring of the older wood,—a "heel" in greenhouse language,—you have the very best cutting it is possible to get.

Put the cutting in some material to make roots,—very coarse sand is the best material. Keep the sand moist and the air close and moist. Your only object in view now is to keep the cutting from wilting,—that is, losing more moisture through leaves than it takes in. Frequent light sprinkling of the leaves is beneficial. There are, of course, many things that will make roots easily in ordinary soil. If your cutting is of that kind put in it soil at once.

Throw some soil into a small pot. If you use these porous pots it is well to dip them into water for a minute first so that they may not absorb the moisture from the soil. Hold the cut-

ting with one hand in the center of the pot and with the other fill up with soil. Press it down. Press it down hard. Most amateurs have no idea of potting hard enough. Put your fingers down close to the cutting and make the soil very firm next to the cutting and in the bottom of the pot. Then finish off the top smooth and level and leave enough of a collar to hold water enough so that in watering you can put in enough at one time to soak entirely through. Water thoroughly at first and do not keep in bright sun for a time. It is only a cutting and will wilt easily, as it has no roots with which to take up water from the soil. So a moist atmosphere is beneficial for a time.

Here is a cutting that has been making roots in the sand and it is time it was potted. Let us pot it. The process is practically the same as when there were no roots. But it will not need such careful attention, as it has roots ready to do their part. Water thoroughly, but not so frequently afterwards as you would if the pot were full of roots.

Here is a plant that has grown for some time in this small pot and you think it needs repotting. It is not necessary to wait until it begins to show signs of starvation by growing weak or yellow or by dropping its lower leaves. If you suspect that it needs it just look and see. It is easy. No, don't get a kitchen knife and run around the pot. If you potted it hard in the first place in a clean pot and your pot is of this shape, all you have to do is to spread the fingers of one hand over the top of the pot, invert the pot with the other hand, and a rap or two of the pot on the edge of the table will leave the whole mass in your hand. You can always do that if you choose a time when the soil is neither very wet nor very dry. The roots of this plant are only just creeping out to the outside. It does not need repotting yet. Let us try another. There! That is what we call root-bound. It hurts some plants to get as root-bound as that. But a geranium will bloom the better for it and a palm should always be allowed to get so before repotting. But a heliotrope would have lost its lower leaves long before this if so treated. In repotting use a pot only a size larger than the one you discard. In the artificial condition of growing in a pot a plant is much better off if it does not have a pot

much larger than its roots occupy at any given time, because, to give you one reason, the soil into which the roots do not penetrate is likely to become sour and unfit for use. So give your plants a pot of the size they need now and repot again when they need it. If you have a little soil stored away it is easy. Some slow-growing plants, many palms for instance, only need repotting about once in two years. A geranium needs perhaps four or five shifts each year.

And now we will repot this plant. Put a piece of broken crock or dish in the bottom over the hole. That is enough for this four-inch pot, as we know the plant will only stay a short time in this pot. If it were a palm I would put in several pieces, for in the course of a year or two it is much more likely to get clogged, and good drainage is very essential. If it were a larger pot I would use more pieces. Throw in enough soil to raise the ball of earth up to within about half or three-quarters of an inch of the top. Then, being careful to keep the ball of earth in the center and the plant perpendicular, fill up the crevice with soil and press it down well. Don't break the ball and injure the roots but press the soil down around it with your fingers. If you can not get your finger in use a small stick and ram the soil down quite hard. It must be just as hard as the old ball of earth or else when watered the water will run down in the looser outside soil and leave the center dry. Of course there is a difference in different plants. A palm can scarcely be potted too hard and a geranium you will find will both bloom better and grow much shorter-jointed and more stocky, if potted hard. Ferns, on the other hand, like a soil looser, but don't think that means just thrown into the pot. It should be pressed down more than most people imagine.

Pruning is, I am sorry to say, an unknown art to many people. A little judicious pruning in season is all that has been lacking in the training up of many a lanky, unsightly plant in the way it should go. Take a geranium, for example. When it gets six or eight inches high, if it does not branch of its own accord, "stop" it, that is, nip out the top so that side shoots must come on. Then you will shortly have a plant with probably three branches. And while you may have lost one blos-

som by this process, you now have a plant with branches to bring three instead of one. If, when these branches become six or eight inches long, they show no tendency to branch "stop" them in the same way. Don't be afraid to sacrifice a leaf or two; you will gain by it in every way. And if for any reason you have been unfortunate and find you have an unsightly, straggling plant, cut it back ruthlessly. It may be more unsightly still for a little time, but it is your only hope of having anything to gladden the eye. And if you are one of those very capable people who can get a rose bush to bloom for you there is another place for the use of the pruning shears. If you do not cut the rose off to give to some one, after the blossom is no longer a thing of beauty, cut back that branch so that you will leave only two or three "eyes" from which to get new branches. If you do not you will have too many and they will all be weak and perhaps not able to produce flowers at all. And it is only from these new growths that the flowers come. Judicious "stopping" and pruning is very essential if you would grow strong shapely plants.

And last is the subject of watering. When shall you water your plants? When they need it. That is the only honest reply any one can make to the question. I can not tell unless I know the condition of that plant. Is it a quick grower, or is it its season for making growth or for resting? Are its roots occupying all the soil in the pot or is it just repotted? What are the conditions of temperature and moisture in the atmosphere and sunlight? All these things any one must know before his judgment is worth anything. To water intelligently one must know both the condition and requirements of each plant. I could not step into another green-house and water as intelligently as I do in my own. Watering is the rock on which most people are wrecked. There is little that can be said. You must learn it by observation and trial. This much may safely be said: More plants are injured by over-watering than under-watering them. You may safely soak a calla or an umbrella plant every day. But no other plant that I think of just now will stand it. They are swamp plants in their nature. Most plants should become somewhat dry before they are

watered, then watered so that the water will run out at the bottom of the pot. A geranium should become almost dust dry, not dry enough to wilt, but the soil should be hard and dry. Here is the only rule I can give you: Examine each plant before watering and do not water it until it needs it. If you can not use a fair degree of intelligence in the matter and still want plants about you, you are fair prey for florists. Go, buy your plants and when they fail you go buy again. We do not object to furnishing and refurnishing your jardinières. That last word reminds me of one more don't. Don't let water stand in your jardinières. Wet feet are bad for plants as for people.

The worst things you have to contend against in an ordinary living room are a dry atmosphere and too great heat. The latter can not be remedied. Your house is primarily a place for people to live in and only secondarily for plants. Against the dry atmosphere you may be able to contend. Have a hand-sprinkler or use a whisk broom dipped in water and spray the leaves as often as you can.

Finally, if a plant becomes unsightly and you see no hope of a remedy, send it to the rubbish pile without hesitation. If it is not a thing of beauty it has no "excuse for being" in your house. Let beauty ever be your watchword.

Thursday Morning, Jan. 17, 1901.

Report of Auditing committee was read by Mr. Smith:

Oshkosh, Wis., Jan. 15, 1901.

Mr. President and Members of the State Horticultural Society:—Your committee have examined the financial reports of the secretary and treasurer, and report same to be correct.

Respectfully submitted,

IRVING C. SMITH,

L. F. LAITEN,

Financial Committee.

Mr. L. G. Kellogg moved that the report be adopted and placed on file. Carried.

President Johnson then read his annual report, as follows:

PRESIDENT'S ADDRESS.

Ladies and Gentlemen:—Since our last annual meeting not only another year has fled, but a century has gone, and its deeds, whether good or ill, have passed into history,—the century that brought to each of us life and love and gladness and also somewhat of sorrow and sadness. The memory of all is precious, but it is not of these things we would speak now, nor will we attempt a review of the past or forecast of the future. It is too late to put our ears to the earth and listen for the tramp of the coming century. The twentieth century is *here*. Of course we have been looking forward to it as the millenium, but every horticulturist is ready to admit that the millenium is not yet. We do not yet see every man sitting under his own vine and fig tree with none to molest him or make him afraid. We do not yet see all men eating fruit,—as our first parents were authorized by their Creator to eat it,—“*freely*.” On the contrary we see thousands in the large cities within and around our own state who seldom taste of fruit, and thousands more in the rural districts that know nothing of the satisfaction and health which comes of eating fresh fruit freely.

There is no denying that many of our otherwise successful farmers fail along horticultural lines,—I mean horticulture in its broadest sense,—the outward surroundings that distinguish a *home* from a *dwelling*. The fruitful tree, the grateful shade, the convenient garden, the beautiful and fragrant flowers, the protecting vines and shrubs, what a revelation these or the lack of them give as to the character of the owner, for what a man fails to do reveals character as surely as what he does. Where an otherwise successful farmer fails horticulturally I can not shake off the impression that he thinks too lightly of his home.

Along with this indifference as to home surroundings there is naturally a public sentiment which permits a corresponding public evil that affects the welfare of the entire state. “For sensitive souls there are fewer pangs keener than those caused by the destruction or mutilation of cherished and beautiful ob-

jects. There is a heedlessness in such vandalism that is next to wantonness. For instance: The sordid spirit that cuts down a group of noble trees, dear to the public heart, for the sake of a few cords of firewood or two or three thousand feet of lumber; or which blasts away a gray old ledge by the rural roadside, fern and moss-covered, when a few rods away a quarry, just as valuable, might be opened without harm and with equal ease."

When the land of our great and beautiful state was surveyed, a wise and just government reserved every lake and every little lakelette and also a meandered strip surrounding each body of water. These lakes and the strips surrounding them were never sold by the United States government, but were turned over to our state, a trust to be held in reserve for the public benefit of this and coming generations. The same spirit that leads us to neglect our home surroundings causes us to despise our public birthright. We look on with indifference while grasping corporations seize public utilities, vandals destroy, and schemers fence up the public domain. Others wantonly kill and have well-nigh exterminated our song birds, our game birds and native wild animals.

I said we look upon all these things with indifference, but that is a mistake. We are like "the man with the muck rake," with eyes fixed on the ground,—we scratch away at the rubbish oblivious of all about us, never even raising our eyes enough to catch a glimpse of the golden crown just above our heads.

Sometimes we anxiously inquire whether the cause our Society represents really is making any headway. If we look at the past we may find much to encourage us regarding the future. We think many of our people do not appreciate the importance of fruit. True; but many of us can remember when the small fruit industry, now so widespread, had its beginning. Are many, many still indifferent to the surroundings of their homes? Less than fifty years ago cattle and swine roamed at will in the highways throughout the state, even in the cities and villages. Our cemeteries were neglected and desolate. The mere mention of these facts indicates a changed condition. But more significant than the changed conditions is the changed

ideal and the changed attitude of public opinion. When a good woman, whose own sorrows had opened her heart toward all others who were bereaved, attempted to give to the city of Milwaukee the tract of land now known as the Forest Home cemetery, and also a large sum of money, the interest only of which was to be used for the maintenance of the grounds, with the provision that the city should maintain the cemetery as a beautiful landscape garden, the proposition met with bitter opposition, an opposition that at the present time is almost inconceivable.

With regard to the protection of the natural beauty of our state we find much to encourage us in what has been done recently along these lines in other states. The state of New York has saved the Adirondack region, and in conjunction with the Dominion of Canada has rescued Niagara Falls and its surroundings from the ring sharpies that had gotten hold of it and were robbing every lover of nature who dared to look that way. Within ten years a trust to protect nature's beauty has been formed in the state of Massachusetts. This association has accomplished wonderful things in securing and presenting free to the public places of great natural beauty and spots at buildings of historic interest.

We can not but think that the good people of our own state will soon realize the financial, as well as aesthetic, value of our beautiful inland lakes and will then arise in their might and assert their rights.

With regard to our homes we find the greatest encouragement in the ideals which are being implanted in the minds of all of our children. It does seem as though the introduction of Arbor Day into our public school system was an inspiration from above. Arbor Day, with its tree planting, its songs and its recitations is surely implanting in the minds of the children ideals that will surely develop in future homes. If our Society had accomplished nothing else, this one thing, the introduction of Arbor Day into our public school system is a glorious achievement. As horticulturists we do not look upon our schools as perfect, we yet hope for the introduction of enough nature study to draw out the child's powers of observation.

What we have already attained surely gives promise of great achievements in the future.

The President—We will now proceed to the election of officers. Our constitution provides that the election shall be by ballot, unless you choose some different order. We will take them up in the order in which they are named in the report, and I would appoint as tellers Messrs. Edward, Tong and Sperback. We understand the first ballot has always been considered an informal ballot.

First ballot for president: Total, 55; Dr. Loope, 51; Franklin Johnson, 2; S. H. Marshall, 1; Henry Tarrant, 1. On motion of Mr. Hoxie the vote for Dr. Loope was made unanimous.

Judge Ryan, on behalf of the Outagamie Horticultural Society, presented the name of Charles A. Abbott for vice-president.

The president stated that the informal ballot practically was in the nature of a nomination, and nominating speeches were declared out of order.

First ballot for vice-president: Total, 53; Edwards, 36; Abbott, 12; Smith, 1; Coe, 3; Kellogg, 1.

Formal ballot for vice-president: Total, 53; Edwards, 35; Abbott, 17; Smith, 1. Mr. Edwards was declared elected.

First ballot for secretary: Total, 59; J. L. Herbst, 57; Philips, 1; L. G. Kellogg, 1. On motion of Mr. Hoxie the vote was made unanimous for Mr. Herbst.

First ballot for treasurer: Total, 59; Barnes, 27; Kellogg, 24; Coe, 6; Smith, 2.

Formal ballot for treasurer: Total, 59; Kellogg, 33; Barnes, 25; R. J. Coe, 1. L. G. Kellogg was declared elected.

First ballot for corresponding secretary: Total, 52; Marshall, 49; Coe, 1; Tong, 1; Hoxie, 1. On motion of Mr. Hoxie the vote was made unanimous for Mr. Marshall.

Report of committee on resolutions was read by Mr. Converse.

A motion that the resolutions be adopted as a whole was lost.

Motion that they be read and adopted seriatim, carried.

First resolution read.

Dr. Loope—I have no objection to the adoption of the resolution. The only thing was that I wanted to express in some manner our appreciation specially of the entertainment last night by the Algoma Society, and I did expect to make a motion to that effect, that this Society extend a vote of thanks to the Algoma Society and those who partook in the entertainment last night.

It was moved by Mr. Hoxie that the suggestion made by Dr. Loope be embodied in the resolution, which was carried, and the resolution as amended was adopted.

The second and third resolutions were then read and adopted.

Resolution thanking Mrs. Johnson was adopted by a rising vote.

Belgian hare resolution was adopted.

The following resolution was adopted:

Resolved, That the Wisconsin State Horticultural Society make an exhibition at the Pan-American exposition, provided a sum of not less than one thousand dollars can be secured to enable the Society to make a good show.

On motion of Mr. Hoxie the foregoing resolution was referred to the executive committee for immediate action.

Resolution regarding re-grafting of trial orchard was referred to the executive committee.

Resolution regarding "Wisconsin Horticulturist" was referred to the executive committee.

Mr. H. G. Bradt offered the following resolution on behalf of Mr. Pendergast:

Resolved, That the executive committee of this Society be authorized and instructed to co-operate with similar committees from Dakota, Iowa, North and South Dakota and Minnesota in devising some systematic plan for the improvement of our fruits, and for providing a Gideon memorial fund and determining how that fund shall be disposed of. (Adopted.)

Mr. Pendergast—What I thought of was, that in our experiments in the line of producing better fruits, more long keeping apples and better apples, that the committees might think out

some line that it would be well for North Dakota to adopt, and pursue to the end as nearly as possible; another one for South Dakota and another for Iowa, another for Minnesota, another for Wisconsin, so that when one got through with its work, that it might be considered pretty well established, the conclusion which they reached might be pretty well established. As it is now, these four or five states would have to go over all these several lines by themselves and doing so much, they do but little well, whereas if each one had his share narrowed down to one particular thing, he could do that remarkably well, reach some conclusion that we might consider fixed, and so get along four or five times as fast by adopting this plan as we should if each one undertook to do it all.

AFTERNOON SESSION.

Thursday, January 17.

Mr. Hatch read the following report as delegate to Michigan Society:

REPORT OF DELEGATE TO MICHIGAN.

A. L. Hatch, Sturgeon Bay.

The thirtieth annual meeting of the Michigan Horticultural Society which I attended as your first delegate, was held in the city of Grand Rapids, Dec. 4, 5, 6, 1900. With a knowledge of Michigan's reputation as a fruit growing state, it was only reasonable to expect a meeting of highly intelligent horticulturists. Every session, every paper and every discussion was entertaining and instructive,—not a poor thing upon the whole program. The business of the Society is mainly done by the executive board, as in our Society, which leaves the annual meetings free for consideration of practical subjects as arranged in their program. From the Society your delegate received

only courtesies, especially from the president, Hon. C. J. Monroe, and the secretary, C. E. Bassett. As an immediate result of our attendance as delegate and by my invitation we have upon our program for this meeting a paper by Pres.-elect R. M. Kellogg, who comes as delegate, and a paper by Prof. R. L. Taft from the Michigan Agricultural College.

The Michigan Society has a trial station at South Haven where many kinds of fruit are being tested and their work is along lines similar to that of our state Society, and with a broader horticulture than ours, a closer relation in the future will probably result in mutual benefit of much value. As an index of the wide range and importance of Michigan fruit culture some figures from the secretary of the Grand Rapids Fruit Growers Association are of interest.

Shipments of fruit from Grand Rapids in 1900, exclusive of irregular shipments by private parties:

Pears, 11,370 bushels; plums, 36,000 bushels; peaches, 500,000 bushels; apples, 17,900 bushels; crab apples, 2,179 bushels; cherries, 25,500 bushels; quinces, 500 bushels; pie plant, 4,000 bushels; grapes, 325 tons; gooseberries, 2,600 cases of 16 quarts; currants, 17,500 cases of 16 quarts each; blackberries, 70,500 cases; strawberries, 130,000 cases; strawberries, 106,000 cases.

At one evening entertainment there was an audience of about four hundred. This was a stereopticon lecture on landscape gardening, and was very instructive. At the other sessions there was an attendance of from thirty to seventy-five persons, only two or three of whom were ladies. At the election thirty-two ballots were cast. No special effort was made to secure a fruit exhibit and but five dollars were paid in premiums. The display consisted of 8 plates of Nebraska apples, 40 plates of Michigan apples, some samples of pears, filberts, chestnuts and Japan walnuts. Seven pots of plants and seven vases of cut flowers were shown. Among the apples were Golden Russett, Talman Sweet, Ben Davis, and Shiawasse.

The Society had not taken action previous to this meeting in regard to making an exhibit at the Pan-American exposition, but it was reported that private parties had considerable fruit

in store for that use and the Society will doubtless take charge of it in due time.

At the time of the exposition the American Pomological Society meets in Buffalo in September and two delegates were elected to attend and I hope our Society will take similar action at this meeting.

Herewith I submit some documents marked Exhibits A, B, C, D, E and F. These are for the information of the secretary of this Society, for the president of the Wisconsin Forestry Association and the editor of our magazine, as marked.

I will now attempt a very brief review of the various sessions, with the statement that to give them in full would be to write a volume.

The first session was devoted to officers' reports and the apple situation. Apple culture seems to have been somewhat neglected in Michigan of late years, or at least in the peach belt has been made second to peach culture. One nurseryman said that in selling one hundred thousand peach trees he would need no more than two thousand apple trees to go with them. Inquiry among the nurserymen present showed a scarcity of apple trees now in stock and a revival of the demand. The west Michigan nurseries reported one sale of 15,000 apple trees to one wealthy land owner of Pontiac who intends to plant them on land recently lumbered over.

Mr. G. A. Hawley of Hart had a paper on The Rise and Fall of the Michigan Apple. He attributes the decrease in quantity and quality to neglect of culture, lack of spraying, want of proper pruning and absence of proper fertilizing of the orchards. If all these matters were properly attended to good crops would again be assured. In regard to spraying he was emphatic in saying that 90 per cent. can be saved in good marketable condition.

Prof. Taft's paper being upon our program need not be reviewed here. Upon the question of varieties Mr. E. C. Phillips, in his list of apples to plant in Michigan, included Tetofsky, Red Astrachan, Yellow Transparent, Alexander, Ben Davis and Talman Sweet. In planting a commercial orchard where 500 of each were planted he would plant Baldwin, Wagener and Jonathan.

One session was devoted to Forestry under the management of that eminent horticulturist, Mr. Chas. W. Garfield. It was claimed that White Pine would play an important part in the reforestation of the cut over lands of the state and that forest fires were the great drawback; also that forestry and forest reservation should be under legislative control. It was stated that climate does not rapidly change on account of forest denudation and it is likely that there has as yet been no perceptible effect in that regard.

That well known horticulturist, Hon. T. T. Lyon, of South Haven, lately deceased, willed his property valued at \$3,000 or \$4,000 to the Horticultural Society for promoting what he termed higher horticulture as distinct from commercial horticulture. To secure this bequest the Society will endeavor to add \$5,000 to the fund.

At one session devoted to "Village Improvements," the subject was well handled along horticultural lines. In treating of streets and gutters the use of crude petroleum as a substitute for water sprinkling of streets was highly spoken of.

The stereopticon lecture on Landscape Gardening was furnished free by the National Cash Register Co., of Dayton, Ohio. Although an advertising scheme it was well worthy in every way and shows what good business management can accomplish when properly attempted in this matter. This concern employed a landscape gardener to improve the appearance of their own buildings and homes of their workmen and found the work so satisfactory that they gave his services free to residents within 10 blocks' distance from their factories. The views were largely of buildings, streets, etc., before and after planting, and altogether was a most impressive exposition of the value of trees, shrubs and plants in improving home surroundings. The art is based upon a few principles, such as: "Plant in masses rather than in regular rows;" "In the center leave an open space just as nature does in her most beautiful views;" "The lawn, beautiful velvety green grass, is the groundwork, the field, upon which every landscape picture is spread."

The last session was devoted to miscellaneous subjects, including a paper by Pres. Kellogg on "Work for the Plow and

Cultivator," and "Michigan at the Pan-American Exposition," by Prof. Van Deman. Since these two gentlemen are upon our program I need not review their addresses.

The report from the South Haven station recommended the use of arsenite of lime as better than Paris green to use in spraying. Prof. Taft's formula for its preparation is as follows: 1 lb. white arsenic, 2 lbs. fresh lime, two gallons of water and boil together 40 minutes. This is sufficient to use in 300 gallons of Bordeaux mixture or water. It was stated that severe pruning had killed some trees that were badly injured by the winter cold, while moderate pruning was helpful. Crimson clover commended as ideal cover crop; oats also good and in case of dry weather at sowing in August more likely to germinate. Prof. Van Deman praised cow peas for this purpose. The report praised the Loudon raspberry and Wilder currant, Pomona not good; Windsor best of new sweet cherries. No new sour cherries better than the old. Of the Japan plums Hale is tender, Wickson irregular in bearing. In apples the Wealthy was reported as good. Ontario (a Spy-Wagener cross) is worthy of further trial. Japan Walnut hardy and early bearing. Apricots not hardy. One gentleman mentioned Gano apple as being sold in considerable quantity and Prof. Taft spoke well of it, but Prof. Van Deman did not commend it.

Mr. Thos. Gunson of Michigan Agricultural College spoke of Horticulture at Paris exposition, and as he saw it last summer in western Europe. The American apple is the king of fruits in Europe. Europeans were greatly astonished to see American apples kept so well. They have no European product to compare with our apples in size, color, or quality. A good many of our apples are sold there at fancy prices in April, May and June, but these prices are but little better than that may be obtained in our own markets at that time. The climate of the British Isles is so cool that fungus diseases do not thrive there as they do here. However, the use of netting to protect strawberries, bush fruits and cherries from birds is necessary and general, and with cool climates the season for the cheaper fruits like berries is greatly prolonged.

There were no papers or discussions upon small fruits or grapes, the former having received attention at the regular summer meeting. I learned, however, that raspberry culture, especially of the blacks, has not suffered from fungus diseases as in our state. This is also true of blackberry culture. The Conrath raspberry was well spoken of by some growers. The Abundance and Grand Duke plums were also mentioned with favor.

In shipping and marketing fruit the Michigan growers have very large experience. The best growers either sell direct to buyers at shipping point or ship on orders to regular customers while the poorer fruit and careless growers go to commission men. There is so much to learn we think it will be wise for our Society to send delegates to all Michigan Horticultural Society meetings in the future.

A motion that the executive committee be now elected was carried.

The following were chosen:

First District—Prof. Goff.

Second District—Henry Tarrant, Janesville.

Third District—William Toole, of Baraboo.

Fourth District—J. H. Cooper, North Greenfield.

Fifth District—Geo. J. Jeffrey, Milwaukee.

Sixth District—Herman Christianson, Oshkosh.

Seventh District—J. J. Menn, Norwalk.

Eighth District—Mr. C. A. Abbott, of Appleton, elected.

Ninth District—Mr. A. L. Kreutzer, elected.

Tenth District—D. E. Riordan, Eagle River.

Prof. Goff was re-elected to succeed himself on trial orchard committee.

Mr. L. G. Kellogg read report of committee on awards, on fruits, as follows:

PREMIUMS AWARDED

At the winter meeting of the Wisconsin State Horticultural Society, held at Oshkosh, Wis., Jan. 14, 15, 16, 17, 1901:

Plate, Tallman Sweet, Edwin Nye, Appleton.....	1st
A. D. Barnes, Waupaca.....	2nd
Plate, McMahon, F. H. Chappel, Oregon.....	1st
A. D. Barnes, Waupaca.....	2nd
Plate, Bailey Sweet, A. D. Barnes, Waupaca.....	1st
Plate, Price's Sweet, A. D. Barnes, Waupaca.....	1st
Plate, Prices Sweet, A. D. Barnes, Waupaca.....	1st
Plate, Banana, G. W. Snyder, Oshkosh.....	1st
Plate, Perry Russett, G. W. Snyder, Oshkosh.....	1st
H. Floyd, Eureka.....	2nd
Plate, Ben Davis, Henry Tarrant, Janesville.....	1st
George J. Kellogg, Lake Mills	2nd
Plate, Roman Stem, H. Ellis, Waupun.....	1st
H. Tarrant, Janesville.....	2nd
Plate, Minkler, H. Tarrant, Janesville.....	1st
Plate, Rome Beauty, H. Tarrant, Janesville	1st
Plate, Malinda, J. W. Roe, Oshkosh.....	1st
Henry Tarrant, Janesville.....	2nd
Plate, Murphy's Gr., Henry Tarrant, Janesville.....	1st
Plate, Spitzenberg, Henry Tarrant, Janesville.....	1st
Plate, Repka, A. Clark Tuttle, Baraboo.....	1st
F. H. Chappel, Oregon.....	2nd
Plate, Plumb Cider, M. J. Morris, Omro.....	1st
M. S. Christensen, Oshkosh.....	2nd
Plate, Roils Jenette, M. J. Morris, Omro.....	1st
F. H. Chappell, Oregon.....	2nd
Plate, Newells Winter, F. H. Chappell, Oregon.....	1st
Parsons & Loope, Eureka.....	2nd
Plate, Wealthy, Parsons & Loope, Eureka.....	1st
F. H. Chappell, Oregon.....	2nd
Plate, Utter, F. H. Chappel, Oregon.....	1st
J. W. Roe, Oshkosh.....	2nd
Plate, Windsor Chief, F. H. Chappel, Oregon.....	1st
Plate, Dominion Winter, F. H. Chappel, Oregon.....	1st
Plate, Wolf River, F. H. Chappel, Oregon.....	1st
Jno. Nelson, Oshkosh.....	2nd
Plate, Gano, Parsons & Loope, Eureka.....	1st

Plate, Willow Twig, J. W. Roe, Oshkosh.....	1st
Parsons & Loope, Eureka.....	2nd
Plate, McAfee, Parsons & Loope, Eureka	1st
Plate, Scotts Winter, Parsons & Loope, Eureka.....	1st
Edwin Nye, Appleton.....	2nd
Plate, Pewaukee, Parsons & Loope, Eureka.....	1st
Fred Rogers, Zion.....	2nd
Plate, Duchess, Parsons & Loope, Eureka.....	1st
Plate, Yellow Transparent, Parsons & Loope, Eureka.....	1st
Plate, McIntosh, Parsons & Loope, Eureka	1st
Plate, N. W. Greening, Parsons & Loope, Eureka.....	1st
J. W. Roe, Oshkosh.....	2nd
Plate, Blue Permain, Parsons & Loope, Eureka.....	1st
J. W. Roe, Oshkosh.....	2nd
Plate, Sweet Fameuse, Parson & Loope, Eureka.....	1st
M. V. Sperbeck, Oshkosh.....	2nd
Plate, Salome, Parsons & Loope, Eureka	1st
Plate, Mann, Parsons & Loope, Eureka.....	1st
Edwin Nye, Appleton.....	2nd
Plate, Golden Russett, G. J. Kellogg, Lake Mills.....	1st
J. W. Roe, Oshkosh.....	2nd
Plate, Paradise Sweet, J. W. Roe, Oshkosh.....	1st
Plate, Walbridge, Fred Rogers, Zion.....	1st
J. W. Roe, Oshkosh.....	2nd
Plate, Bethlehemite, J. W. Roe, Oshkosh.....	1st
Plate, Hass, J. W. Roe, Oshkosh.....	1st
O. W. Babcock, Omro.....	2nd
Plate, Stark, J. W. Roe, Oshkosh.....	1st
Plate, Grimes Golden, Mrs. E. W. Kemeys, Lake Mills.....	1st
Plate, Bellflower, Edwin Nye, Appleton.....	1st
Plate, Black Detroit, Fred Rogers, Zion.....	1st
Plate, Bethel, Fred Rogers, Zion	1st
Plate, Fameuse, Fred Rogers, Zion	1st
Plate, Dominie, M. J. Morris, Omro.....	1st
Plate, Zuzoff, O. W. Babcock, Omro.....	1st
Plate, St. James, H. Floyd, Eureka.....	1st
Plate, Aiken, H. Floyd, Eureka.....	1st
Plate, Sweet Pear, H. Floyd, Eureka	1st
Plate, Black Twig, H. Floyd, Eureka.....	1st

CRABS.

Plate, Whitney, F. H. Chappel, Oregon.....	1st
A. D. Barnes, Waupaca	2nd

Plate, Hyslop, G. W. Snyder, Oshkosh.....	1st
Plate, Minnesota, Parsons & Loope, Eureka.....	1st
Plate, General Grant, Robt. Buckstaff, Oshkosh.....	1st
Largest Apples, A. D. Barnes, Waupaca.....	1st
Parsons & Loope, Eureka.....	2nd
Best Display Seedlings, Parsons & Loope, Eureka.....	1st
J. W. Roe, Oshkosh.....	2nd
Best Display Winter Seedlings, Parsons & Loope, Eureka.....	1st
J. W. Roe, Oshkosh.....	2nd

Ripon, Wis.

L. G. KELLOGG,
Judge.

The President—I see there is one number left on our program from yesterday afternoon, that is the paper by Mr. Irving C. Smith of Green Bay on “Market Gardening.” Perhaps it would be well to listen to this now, if that is your pleasure.

HOW TO MARKET VEGETABLES.

Irving C. Smith.

The time to market vegetables is when some one wants to buy. The way to market is to put them up in such fine shape that every one seeing them will want to buy.

Beauty and quality are the two most prominent points to be considered. We take it for granted that you know how to grow good vegetables, else you would not want to know how to market.

Tempt the eye first. To do this, study to have everything as neat as possible. Tie bunches with common white wrapping twine, wound twice around the bunch. Wash all goods carefully. Sometimes it is necessary to wash in two waters to get the sand off, especially just after a rain. It is always best to have two tubs for washing, so that stuff may be put from one to the other and save all unnecessary handling. It is usually best to wash radishes before tying. Dump into a tub, stir round a

little and dip out with a sieve or fork. Put into water again after tying. Radishes are improved somewhat in appearance if the tails are clipped off, after being tied. Washing first makes it much easier to sort out all wormy bulbs.

Skin onions nicely, being careful not to cut the roots off too short or they grow out over night, and if too long they look dirty.

Pull off all dry or yellow leaves from lettuce or beets and turnips; also clip roots of the two latter. The tops may or may not be cut off, according to season or trade notions. Be careful not to bruise the tops of green stuff or they will spoil very quickly.

Asparagus should be bunched with the top ends even and then with a sharp knife clip the butts a little. This makes the bunches even in length and gives them a much more tidy appearance in general.

Be careful to make the bunches of each variety of goods of a uniform size and also of a convenient size for the retailer to sell.

In picking peas and beans be careful to leave all over-ripe or rusty pods; and do not wet after picking if it can be avoided.

If you have a home market carry goods to town in open boxes or bushel baskets packed in so as to present the best possible appearance; but never put the best goods on top. Better put the poorer on top if there be a difference.

If you are shipping use light boxes or crates and pack evenly and regularly, so goods will come out without being crooked and ill-looking. For most goods crates should not hold over one bushel. Large crates heat and pack too much.

Freshness is the first essential of good quality. By constant care and a reasonable knowledge of prospective trade this may be provided. To do this, we must reverse the old proverb and say: Do nothing today that can be done tomorrow. Never put up goods for market in the afternoon if the next forenoon will give opportunity to gather and deliver in proper time. Goods kept on hand over night must not be allowed to heat or they will be badly damaged.

Remember, too, that the greater part of the people who buy vegetables do not know what good quality is, as you under-

stand the term; and you must educate them only as fast as you find yourself able to supply the demand.

When people want a better quality of goods than you can furnish, beware! Some one is getting ahead of you. Lead and others will follow. Don't follow where others lead.

In selling, better have the reputation (and be sure you earn it) of being the high priced man, than the cheap man. In the latter case you are liable to be cheap in more than one sense. Stand on your dignity and honor and let no one browbeat you and make you think your goods are not worth the highest market price, when you should know better.

Be on friendly terms with the retailers and occasionally discuss the price you want and the price they must get for goods and you will find most of them ready to do the fair thing by you. This is particularly true in the case of some new goods, such as hotbed lettuce. Ask him 40c per dozen and let him sell at 5c per head. This gives both a reasonable price for his work. But be sure your stock is first class and worth 5c each, or you will get into trouble.

Of the many points to be considered in marketing vegetables only a few of the most important ones have been mentioned. Many more might profitably be discussed but Father Time calls a halt.

In conclusion let me repeat our first proposition. The time to market vegetables is when some one wants to buy. The way to market is to put them up in such fine shape that every one seeing them will want to buy.

DISCUSSION.

Mr. Hatch—I would like to ask Mr. Smith in regard to the putting up, handling, shipping and marketing such vegetables as go to the market green. I can not see why they leave the tops on, when we all know that the tops left on tend to depreciate the quality and evaporate the moisture. Now that is especially true with carrots, beets, radishes, parsnips and celery. Celery is a great deal better without the leaves on, and radishes.

It seems to me that is something that ought to be reformed,—doing away with the tops; they are harder to handle, and are a detriment.

Mr. Smith—We leave them on because the people that buy them want them on.

Mr. Hatch—No other reason?

Mr. Smith—That is the only reason.

Mr. Barnes—I think the tops are often left on for convenience in tying and making a pretty showing in the market, and they make a nice show on the wagon and in the trays.

Mr. Smith—If any one thinks that the people that buy them do not want them on, let them take a bundle of radishes and put them on the market and try to sell them by the quart or pint, or any way they can.

Mr. Ames—I would like to ask Mr. Smith if he depends on his home market entirely, or whether he ships?

Mr. Smith—We do both. We have a man working on the home trade every day, but we ship also.

Mr. Ames—Do you think you can establish a high price on the home market, as Mr. Kellogg says?

Mr. Smith—I do not know exactly what Mr. Kellogg of Michigan does on anything except strawberries, and he only told us of one trick he had played there. We get higher prices than most of the gardeners. I am the man that is frequently spoken of as the high priced man, and when people say "Vegetables are not worth so much," I tell them ours are, and they generally pay it. There is a great deal of truth in what Mr. Kellogg says, that people would rather pay a good price than not, provided they get something that is worth it.

Mr. Hatch then read the following paper prepared by Mr. C. Phillipson of Oshkosh, on "Small Fruits."

CULTURE AND CARE OF SMALL FRUITS.

By C. Phillipson, Oshkosh, Wis.

THE STRAWBERRY.

Of all our small fruits the strawberry is the queen and is especially a native of a cold climate. It adapts itself to a larger range of soils than any other, but it requires a soil rich in phosphates.

Prepare your strawberry ground by turning under a heavy coat of manure in the fall; further prepare and plant the next spring. For field culture plant rows running north and south if possible, about four feet apart and from one and one-half to two feet apart in the row, according to the habit of the plant. If you plant of the pistillate varieties, at least every third row should be of a staminate variety that will be in blossom at the same time as the pistillate.

The time of planting depends upon circumstances; it may be done with safety from the time the plants begin to grow in the spring until they are in blossom, but usually the earliest planting gives the best result. It is well, however, to plant at a time when the plants will at once commence growing. Use only good strong plants from a bed that has not yet fruited, being careful that the roots don't get dry at any time while out of the ground. The conditions of success in transplanting are that the plants be kept from drying while out of the ground, that the roots be put in close contact with the soil, that the crown be kept level with the surface and that shade and moisture be supplied until the plant has recovered from the effect of removal.

Almost as soon as the plants are transplanted cultivation should commence. The object is not so much to kill weeds as to keep a loose surface, so that the water coming up from the subsoil by capillary attraction, may be prevented from reaching the surface and escaping, when the plants commence growing. Keep the blossoms and runners off until the plants have be-

come strong, after that let them form a matted row, two feet wide.

As plants grow until freezing weather sets in, mulching must be delayed until the ground is frozen. Any kind of straw may be used; that most free from weed and grass seeds is best. The object of mulching in autumn is to prevent rapid thawing. When once frozen the frost should come out very gradually.

THE RASPBERRY AND BLACKBERRY.

The raspberry seems to do well on any soil suitable for corn, but to reach perfection it must be planted on rather heavy soil. Prepare the land by plowing down a good coat of well rotted stable manure in the fall, and, if the land works properly, the blackberry and red varieties of raspberry may be planted in the fall, care being taken to firm the soil well around the roots and to place a forkful of mulching on top of each plant, to prevent the frost from heaving them out of the ground.

The black raspberries had better be planted in the spring. As raspberries start growth very early in the spring it is best to plant as soon as the ground can be put in proper condition. Plant in straight rows, six feet apart for the red varieties, and seven feet for the black caps and blackberries; three and one-half feet is the proper distance in the row.

When the canes of the blackberry and black caps have reached a height of two feet, pinch off the tip so that laterals will start out along the stem and form a bushy top. Do not prune the red raspberry in summer, but let the whole energy of growth go to a single straight cane in order to get good ripened wood, ready to resist the change of temperature.

Cut them back in the fall to from three to five feet, leaving only the hardest wood to meet the frost. The cutting out of the old bearing canes, immediately after fruiting, is often neglected, to the detriment of next year's crop. There are several reasons why this work should be done as soon as the canes are through bearing; all injurious insects, which may be secreted in the canes, are destroyed; it lessens the liability of attack by fungous diseases; it gives the new canes a better opportunity to

grow; more thorough cultivation may be given and the cutting is more easily accomplished. The raspberry and blackberry plant has a sort of dual nature; it dies every year and yet renews so it bears fruit regularly in season. The new cane seems to have an individuality, its foliage does not seem to aid the bearing cane in perfecting its fruits or perform any aid in growing anything but itself, and for this reason it is not affected if the old wood is cut out as soon as its bearing is over. Some support must be provided for the bearing canes, to keep them off the ground.

THE CURRANT.

The currant is essentially a northern fruit and of all the most easy of production. It is perfectly at home in all this region; its culture is so simple and it adapts itself to so many different soils and situation that none need be without it. Plant in rows six feet apart and three feet in the row. If planted on a larger scale plant five feet apart each way and cultivate both ways. Keep the plant young by cutting out the oldest canes each year and leaving some new canes, keep the worms in check by using hellebore.

The gooseberry is another northern fruit and should be grown in much the same way as the currant.

THE GRAPEVINE.

The grape requires a firm, dry soil and absolutely clean surface culture with plenty of room to extend in summer and for the sun to shine on the soil around the plant. Plant in rows running north and south, if your land is nearly level; if not, plant according to the lay of your land, from eight to nine feet apart and the same distance apart in the row. Cultivate and feed them well and they will go to work and keep at it as long as you like.

The first condition of successful grape growing is healthy foliage. Any system of culture and pruning which fails to secure this is at fault. I would not advise summer pruning except pinching back the laterals. In most parts of the state the

vine must be allowed to extend its summer growth to an indefinite profusion beyond the fruit to retain foliage enough to properly ripen its fruit.

Prune the canes in the fall to two buds. If there are too many canes, so many that even one or two shoots from each cane will cause crowding, cut them out altogether; cut canes that are allowed to remain back to two buds. Before freezing weather sets in lay the vines down and cover with earth.

I do not wish to say much on the varieties of small fruit. It seems to me to be a question of locality and market. Plant only those varieties that have been tried and found profitable. If you wish to try newer varieties, plant only a limited number and if they succeed with you plant more. Don't plant more than you can take care of.

I would, however, like to say a word in favor of the Lovett strawberry and the Hilborn blackcap raspberry. The Lovett is one of the tough, hardy varieties that never disappoint the grower; it has a perfect blossom and bears heavily; the fruit is firm, medium to large size, conical and of good color and quality. The Hilborn is a good all purpose berry, ripening a week or ten days after the earlier sorts; though not so large as the Gregg it yields double the amount of fruit and is much hardier; it continues in bearing a long time.

Report of Trial Orchard was read by the secretary.

REPORT OF TRIAL ORCHARD.

A careful inspection of the trial orchard at Wausau, made the first week in November by Mr. L. G. Kellogg and myself, found it in the best of condition. Some of the grafts put in last spring have made a remarkable growth. Already the tops of the Virginia have been changed and the balance look very promising. Occasionally a sickly tree was found but these only on the experimental part of the orchard. They should

not be condemned at present, but in another year if they do not improve it will demonstrate that they need no longer be tried. All the standard and well tried sorts are doing remarkably well in the commercial orchard, and another year a goodly number of them should bear fruit.

Plums and cherries have a strong, healthy appearance. A few scattering plums were gathered the past year. The ground was in the best of condition. The ridges that were so prominent when we took charge of the orchards are nearly all worked down and soil was very clean of weeds. We were more than pleased with the cover crop which is all over the orchard. The oats stand about the right thickness and made about the proper growth in height. We think the acre of sand vetch might have made a better growth and been a little thicker, but on account of so much rain fall they were unable to sow it earlier. We recommend that more of this be planted. There are about 75 root graft trees that can be taken out next spring and sold to the credit of the Society. We find where several root grafts were put out that it will be to the advantage of the best one to take the balance out and dispose of them this way.

Number of dead trees as follows:

In the commercial orchard but five: 1 Okabena apple, 2 Hawkeye plum, 1 Marcus plum, 1 Montmorency cherry.

In the experimental orchard there are 12 dead: 3 root graft missing (evidently destroyed when dragging and working the soil), 2 Virginia, 6 Montmorencies, 1 Early Richmond.

We cut a goodly number of scions which should be used this spring on trees where some have failed to come.

We have several views which were taken at our visit and which will be passed around for inspection. We have also a map here of the trial orchard for those who have never been there to examine. The key to it is on either side of the map. We recommend that the dead trees be replaced, if possible, by the same variety.

Respectfully submitted,

J. L. HERBST,
L. G. KELLOGG,

Superintendents of Trial Orchard.

DISCUSSION.

Mr. G. J. Kellogg—I supposed that they had kept up the filling in of apple trees of the varieties first planted. I found it was not the case when I was there last season, I do not know whether the design is to keep that full or not. I spoke of the grafting this morning, but the subject was squelched, and I did not know this was coming up at this time, as it is not on the program at all. The first disappointment I had when I got to Wausau was that the plat was gone; I could not get at anything of the history of the orchard. There should be a plat there on the ground.

The Secretary—The plat was there.

Mr. Kellogg—The plat was gone, I could not find a plat. I took a record from your book. I found in the 7th row Duchess has been planted in place of Northwestern Greening, and quite a number of rows have been filled in with other kinds; I supposed the object was to keep the kinds as they were first planted.

Mr. L. G. Kellogg—That was the object, to keep the rows as far as possible, but in the absence of the other trees of the varieties to fill in these rows, we planted last spring Duchess in the row that Mr. Kellogg speaks of, but they have only been substituted in very few places, possibly ten or a dozen trees. We thought it better to plant the Duchess, or some other hardy variety, and then top work to same variety in the row, in the absence of the permanent variety. We did the best we could under the circumstances. The care of the trial station was turned over to us very late, and it was impossible to do just what we desired to do.

Mr. G. J. Kellogg—I criticised the grafting from the fact that only one-third of the grafts were growing at the time we were there.

Mr. L. G. Kellogg—This may be a reflection on the parties who took charge of the trial orchard last spring as not doing their work properly. I would like to make a little explanation. As you are aware, Mr. Herbst and I were appointed, and I instructed Mr. Herbst to write Mr. Philips to get scions which he had cut from the trial orchard that we might put into

the trial orchard. Mr. Herbst twice wrote Mr. Philips for these scions and could get no reply whatever, and in the absence of these scions I had a few scions of my own at home which I used to the best advantage we could. They were scions that we had left over from grafting, in the cellar, and perhaps some of them were not in the best possible condition. What percentage did you say were not growing?

Mr. G. J. Kellogg—One-third grew only.

Mr. L. G. Kellogg—I think that, from looking over the orchard trees last fall, I think at least 50 per cent. of them grew.

Mr. Kellogg—They may have come afterwards; some of them were just showing the buds.

Mr. L. G. Kellogg—There is a good percentage, taking the circumstances into consideration, that are growing now.

Mr. Hatch—In regard to the top grafting, even assuming that you had the best scions on earth, there are springtimes where you can not make them all grow to save your life. There seem to be conditions of the stock itself that are wanting. I have had that kind of experience. I have been top-grafting a good many thousands of them, too, and it is not a reflection upon the skill of the operator; there are certain things he can do, and certain other things you have got to depend upon the Creator to do.

Mr. Kellogg—What was the reason the trees made no growth until the first of July?

Mr. Hatch—They did not recover from that excessive dry condition of the ground. The ground was dry and the trees were dry, and they had not put in that continued supply that was necessary to liquefy and get food material from the ground.

Dr. Loope—We lost some of our choice scions last spring, and a great many scions did not do well.

Mr. Hatch—It did not make any difference in this case how hardy the stock was; the Duchess would behave the same as any other stock. It was not a question of hardiness, it was a question of moisture supply in the ground and in the tree.

Mr. F. C. Edwards—I would like to hear from the other states, the reports from the other societies. I presume they have some brief reports that will be interesting.

E. S. Goff of Madison read report from Minnesota,

REPORT OF E. S. GOFF AS DELEGATE TO MINNESOTA STATE HORTICULTURAL SOCIETY.

To the President and Members of the Wisconsin State Horticultural Society:—As delegate of our Society, I attended the meeting of the Minnesota State Horticultural Society on Wednesday and Thursday, December 5th and 6th, being present at five sessions of which one was the annual banquet. The sessions, with the exception of the banquet, were held in the lecture rooms of the Plymouth Congregational church, corner 8th and Nicollet avenue.

The weather during the meeting was very mild, and the attendance averaged somewhat larger than is usual in the meetings of our own Society. The earnestness and intelligence of the members was manifest in all their sessions, in the character of the papers and the discussions. Two features of their society might, it seems to me, be followed with profit in our own organization, viz., the Ladies' Auxiliary and the annual banquet. It can not be denied that these features increase the interest and pleasure of the meetings and tend to promote concord, a provision which has sometimes been needed in our Society.

The Ladies' Auxiliary is, as I understand it, partially independent of the state Society. That is, it has its own officers and provides its own program, and at least one session of the meeting is given over entirely to it. It is certain that this session was a most profitable one. It did not adjourn until half past five and then there was much of interest that had to be cut off for lack of time.

The annual banquet was instituted this season. It was held at the elegant Guaranty Loan building and was in all respects an up-to-date affair. As is customary at such occasions, the toasts were intended rather to promote hilarity than progress in horticulture, but the comfort and kindly feeling they engender is perhaps more valuable by way of variety than if the time had been devoted to serious work.

In the fruit room were exhibited 277 entries for premiums, beside a number that were not competitive. Of the entries for

premiums J. A. Howard showed 43 and was awarded 20 first premiums, and the Jewell Nursery Co. showed 38 and received 17 first premiums. W. L. Parker, C. W. Sampson, H. H. Heins, Thomas Ridpath, Gust Johnson, W. H. Perry, H. H. Pond and J. R. Cummings were also quite large exhibitors. There were apparently 9 entries for the \$1,000.00 prize seedling apple. There were 35 entries of grapes, 6 of honey and 6 of flowers. Of the 216 entries of apples 170 were from cold storage. The average quality of the apples shown was very fine. Numerous seedlings were shown, of which some appeared to have considerable merit. Mr. Lord showed 40 varieties of bottled native plums and Mr. Cook of Windom showed 18 varieties.

To undertake an abstract of the papers and discussions would require too much space, and it is hardly needed, since many of us already have the *Minnesota Horticulturist*, in which they will all be printed. A very interesting part of the program was the illustrated lecture by Prof. Green, in which he gave a rambling account of his journey through Germany, illustrating many of the commonplace and homely scenes of rural life in Germany, which were the more interesting because they have been so seldom portrayed.

The Society made an excellent beginning in recognizing the valuable work accomplished by the late Peter M. Gideons by subscribing \$225.00 to the fund for his family.

In conclusion, I feel almost compelled to add that if our Society hopes to keep pace with that of Minnesota in progress and usefulness, we shall need to raise up a larger company of workers who are more anxious to contribute some benefit to the Society than they are to reap some personal benefit from it.

Mr. A. E. Edwards of Fort Atkinson read report from Iowa.

REPORT OF DELEGATE TO THE IOWA STATE HORTICULTURAL MEETING HELD AT DES MOINES
DEC. 11, 12, 13 AND 14, 1900.

Mr. President, Ladies and Gentlemen:—The meeting was held in the horticultural room in the capitol building. Our Iowa brothers are ahead of us in this,—that they have a home. They have a nice room on the first floor, and while it is not a large one it was large enough to accommodate all that were present. This room is the office of the secretary, and also contains their library and collection of fruits in wax.

The first session was called at 2:00 P. M. Tuesday and was taken up by President Gardner's address, reports of other officers and appointment of committees. I wish it were possible to reproduce the excellent program given there, but I can only give a short outline of some of the most important papers.

In a paper on New Varieties of Strawberries and Red Raspberries, Geo. I. Bacon of Des Moines spoke very highly of Clyde strawberry and Loudon raspberry. Discussion brought out that Bederwood was very popular in northern Iowa, although rusting in some sections. Lovett and Splendid were well spoken of. Warfield still holds a prominent place in public favor. In discussion on Red raspberries, Loudon seemed to have first place as to hardiness and productiveness. Columbian has many friends; the only thing against it is its color.

N. K. Fluke of Davenport gave a very interesting talk on New Fruits. Mr. Fluke is a man thoroughly in love with his work of bringing out new fruits. He exhibited a number of seedling apples he has produced that will be used in making further crosses. He also had canes of a number of seedlings he has grown of crosses between the dewberry and blackberry, some of them having the upright form of the blackberry and yet rooting from tip like the dewberry. They showed a very vigorous growth and will no doubt be of value.

Plums for Iowa was a very interesting subject, treated by M. J. Wragg of Waukee. He considers plums should have second place, being preceded by apples only as a commercial fruit.

He thinks there are possibilities of new plums of excellent quality and good size by crossing the Japanese varieties on our American sorts. Best three varieties of Japanese are Abundance, Burbank and Wickson. Of these he considers Burbank best. In his opinion American varieties of plums for the masses of Americans are what we want, as they are hardy in both tree and bud. No mistake will be made by planting De Soto, Forest Garden, Hawkeye and Wyant. The plum is as free from disease as any fruit. Discussion brought out a variety of opinions as to what was the best stock to use in propagating the plum. The verdict was seedlings from American sorts, as it was impracticable for nurserymen to propagate from root cuttings or sprouts, as it is almost impossible to get a good root system on trees grown in that way.

Report on Spraying, by E. E. Little, State College at Ames. For plum aphid and other sucking insects use kerosene and water, using 10 per cent. kerosene. He recommends a sprayer that will do its own mixing. For the squash bug use Bordeaux mixture and Paris green. Spraying must be carefully and thoroughly done, or it is useless.

Election of officers was held Wednesday evening, and was accomplished in about fifteen minutes. Officers elected were: President, M. J. Wragg; vice president, N. K. Fluke; secretary, Wesley Green; treasurer, Elmer Reeves,—all new with the exception of the secretary.

The regular program was then taken up and Eugene Secor of Forest City gave a paper on Some Trees Adapted to Northern Iowa not Generally Planted. He urged strongly the planting of trees, many of which are natives, but which receive very little attention. The list given was cockspur thorn, wild black cherry, hackberry, Kentucky coffee tree, honey locust, buckeye, pea tree, walnut, butternut, linden, oaks, laurel leaf willow, and wild olive.

Horticulture; Its Relation to the Home. In this paper S. J. Councilman of Carlisle made a strong plea to the farmer to make home attractive by the planting of shade trees and shrubbery, as well as fruit trees and plants, to give an ample supply of fruit for the family.

R. C. Barrett, superintendent of public instruction, gave a very fine paper on the School and the Farm. He spoke of the advantages of having fewer schools with better instructors. This is accomplished by bringing pupils from several districts to a central point, and is being done in some sections of Iowa at a less expense, including transportation of pupils, than by the old method of having a separate teacher for each district.

One of the most important things of this system, in his opinion, is the children have all the advantages of the town or city school and are still at home with their parents at night.

Pollenization of Fruits was discussed by A. T. Erwin, State College, Ames. He said even perfect blossom varieties of fruit are improved by cross pollenization. Also that it is generally conceded that pistillate varieties of strawberries furnish the best fruit. The reason for this is that pollen-producing is very exhausting to the plant, and by crossing with the non-pollen producers, a better fruit is the result. He believes the time is not far distant when our tree fruits and grapes will be catalogued as pollenizers and pistillates, as our strawberries are today.

Discussion brought out that the bee is not as important a factor in the pollenization of fruits as many have supposed. Secretary Green said weather has more to do with the fertilization of fruits than bees or insects.

In Some Observations During the Season of 1900, C. L. Watrous said that he would not recommend planting European plums for profit. He considers Lotta black raspberries the best and most profitable; Eureka a promising variety. He believes great benefit is derived by planting trees and small fruits together, as both are given protection. His rows of trees are 20 feet apart, with two rows of raspberries or blackberries between. Golden elder, Siberian dogwood and fern leaf sumach are three shrubs he considers worthy of more extensive planting and are hardy at Des Moines.

The Benefit San Jose Scale Has Been to Iowa, by Prof. H. E. Summers of Ames. He stated present high standards in horticulture are due to the obstacles that horticulturists have been obliged to overcome. The scale has been a benefit in this, that

it has brought about improved methods of spraying, arousal of public opinion, causing legislation and nursery inspection, and the sending out of healthier, cleaner nursery stock.

The Fruitman, published at Mount Vernon, Iowa, was adopted as the official organ of the Iowa State Horticultural Society; the secretary to furnish items of horticultural interest for several columns each issue; the same to be published without cost to the Society. There was considerable interest manifested in the Windsor apple. The Northwestern Greening has been adopted as one of their standard sorts. They are there as well as we looking for the hardy, late keeping varieties. The general opinion was that we must get a class of fruit trees that is adapted to our northern and western climate, and that this will be accomplished by the cross fertilization of varieties we have that come the nearest to what we want, and raise seedlings from the fruit obtained by these crosses. I sincerely believe that the systematic work of Mr. Patten, Mr. Fluke and others along these lines can not help but bring out varieties that will be of great value to the entire northwest.

Respectfully submitted,

Fort Atkinson, Wis.

A. J. EDWARDS.

Secretary read report of delegates to northeastern Iowa.

REPORT OF DELEGATE TO THE MEETING OF THE NORTHEASTERN IOWA HORTICULTURAL SOCIETY.

J. L. Herbst, Secretary Wisconsin State Horticultural Society.

The annual meeting of the Northeastern Iowa Horticultural Society was held at Iowa Falls, Nov. 27, 28 and 29, 1900. There was a very small attendance owing to meeting occurring just before and on Thanksgiving day. Meeting was cut short so members could reach home to observe the day of thanks. It took me one whole day to go and another one to come back. I was not in much of a mood to give thanks, but observed the day

by eating turkey on the way back. No young horticulturists were in sight and no women in attendance. The subjects discussed were very interesting, especially the one on the Northwestern Greening. The best six varieties of apples for the family were named as Duchess and Tetofsky for summer, Wealthy and Plum Cider for fall and Wallbridge and Northwestern Greening for winter. Mr. Ivins gave a very good paper on Best Four Varieties of Strawberries and How to Cultivate. He named the Bederwood, Warfield, Haviland and Clyde. Mr. Trigg of Rockford explained "How a Family Could be Supplied with Fruit from a Town Lot." Wesley Green, secretary of the State Society, showed by maps in which sections of the state certain varieties of apples had been successful and where they had failed.

Mr. Patten was appointed as a delegate to our meeting from the Iowa State Society and Mr. Secor as a delegate from the Northeastern Iowa Society.

There was a very good display of apples and some promising new sorts. There were some fine specimens of Northwestern Greening, Wolf River, Salome and Adamson. The Adamson was originated near Iowa Falls and I have brought one of them for the members to examine, also the Salome.

All of which is respectfully submitted.

A. L. Hatch of Sturgeon Bay reported from Michigan.

In calling the meeting to order, President C. J. Monroe of South Haven, said:

"This thirtieth annual meeting near the close of the century furnishes a strong temptation to review its past, note some of its successes and failures and especially to mention some of the important things it may fairly claim to have accomplished, and to which its members may justly point with pardonable pride. But there are so many questions of present importance to be solved, that I think it better to forego a backward look and devote our time to some of the many things claiming the Society's present attention. The present year's large crop of nearly every sort of fruit reminds us anew of the favorable location and con-

ditions of Michigan, cradled as it is amidst the great lakes which nearly surround it. These lakes modify the climate so as to enable us to raise successfully a larger variety of the tender fruits farther north and on a more extensive scale than any other state in America. Besides, it is near large cities having a vast territory of adjacent demand and consumption. These are easily reached by boats, steam and electric cars, with other increasing facilities for rapid distribution.

"For twenty-seven years, with scarcely an exception, the forestry topic has been upon our program. It is simply given greater prominence this year because of the widespread awakening to its importance, especially to our own state. The Society's annual reports treated upon every phase of the subject, making them good for reference and valuable text books. Most of the leading colleges and universities have or are establishing departments for instruction in the protection and care of woodlands, and particularly for the fitting of foresters for their economical management."

The speaker then went on to tell of forestry work and its progress in sections of the country outside of Michigan. He called attention to the fact that a Michigan Agricultural College graduate is now connected with the forestry department of Yale. In closing the following mention was made of a deceased member of the Society:

"For eighteen years this Society had for its president the late T. T. Lyon, whose ability and fidelity added very much to its usefulness. The records of the Society show that he was an active member since its organization and a liberal and intelligent contributor. This being our first annual meeting since his death, a session is set apart for memorial services and the consideration of his will, which bequeaths to the Society his property upon conditions which will be explained at the proper time. Next to the Society was the Experiment Station, where he lived and talked with the ardor and enthusiasm of youth. His work is ended, and it was unusually well done. His was a companionship and a friendship to be remembered and cherished."

Following the president came the annual report of the secretary, C. E. Bassett of Fennville. Mr. Bassett said in part:

"On account of the loss of the state appropriation and the consequent lack of funds with which to carry on an elaborate series of meetings throughout the state, it has been thought best to have but one mid-summer meeting, and that the only meeting of the year, except the present annual gathering. Measured by the extent of local attendance at the Newaygo meeting, the result was hardly satisfactory, but the papers presented and the ensuing discussions were highly instructive and valuable. The summer meetings coming as they do in the midst of the commercial fruitgrowers' busy time, can never be largely attended by that large class of our members. Would it not be a good plan to hold all summer meetings, coming as they do in the midst of forestry and village improvement would be especially interesting?

"During the last year your secretary has superintended the distribution of over 7,000 volumes of the society's last annual report, that of 1898. The report for last year was delayed on account of the number of pages exceeding the maximum number allowed by law.

"The extension of our fruit markets and the investigation of plant diseases by the national government are of so much importance to our members that this society should take some official action at this time in favor of them, and thus aid the efforts now being made in congress to secure the necessary appropriations to carry on the work."

The secretary also made eloquent reference to the late T. T. Lyon.

In his report Treasurer Asa W. Slayton of this city announced that a year ago, at the last annual meeting, the society had on hand \$282.82. Additional receipts made the amount \$985.08. The expenses during the year were \$817.81, leaving a balance of \$167.27 on hand.

Following came the election of officers. The Hon. C. J. Monroe of South Haven having served two terms in the president's chair, was ineligible for re-election. R. M. Kellogg, the veteran horticulturist of Three Rivers, was the unanimous choice for president. No other candidates were proposed. Secretary C. E. Bassett of Fennville was re-elected to that office, but quite a

spirited contest developed, Prof. Taft of the Agricultural College lacking only a little of tying Mr. Bassett on one ballot. Prof. Asa W. Slayton was re-elected treasurer and C. J. Monroe of South Haven and C. F. Hale of Shelby were elected members of the executive board. The remaining members of this board are R. J. Coryell, Detroit; Thomas Gunson, Agricultural College, and C. E. Hadsell, Troy.

"Resolved, That the terms of the will of the Hon. T. T. Lyon be accepted by the Society and that the executive board is hereby authorized to take such steps as are necessary to meet the conditions of the will and report its doings to this Society for approval."

The property which is left to the Society consists of 10 acres of valuable land in South Haven village, known as the South Haven experiment station, and is valued at \$5,000. This property is placed in the hands of Charles W. Garfield as trustee until the Society has raised \$5,000 additional, which will be placed with the Lyon property as a trust fund for the Society.

Mr. Sperback, as delegate of the Algoma Society, said:

We are located in a section where there are many engaged in fruit growing and horticulture,—men who are very anxious to know all they can along the line of their occupation. We hold our meetings the first Tuesday evening of each month, and have a program of papers and discussions and music, after which we have refreshments and a good social time, which enables us to get a little better acquainted with our neighbors and makes our meetings both pleasant and profitable.

Mr. Baldwin, as delegate from Waupaca, said: Our Society has been in very prosperous condition; it has done a fine work in our locality. We have a membership of about 50. I think many of them are very active horticulturists, of which our friend Barnes here is the bell sheep, and Mr. Barnes, having a fine orchard and apples and small fruits in abundance, has given us much instruction in the line of horticulture and the business of producing and shipping fruit. The business of raising and shipping small fruit has increased in the last few years; we are

now shipping probably two or three thousand cases of strawberries and raspberries and before the winter that killed our blackberries, we had a large acreage of blackberries and shipped extensively. At the time of the formation of our Society there were not any apples there; although there had been many planted of the eastern varieties, yet they had all died, and until there were found varieties that were hardy enough to stand our climate, our fruit had become wiped out and we had none, but now we have varieties of fruits that we can produce in that climate and are raising them quite extensively. There are some quite large orchards, many young orchards that are just coming into bearing. We usually arrange our meetings so that during the summer when any particular kind of fruit ripens, we will collect at some place and some person will donate a sufficient amount of the fruit for our entertainment. I think our Horticultural Society has been a great benefit to our section of the country, and while I have been here I have been very much interested in the papers and discussions and various topics that have been treated upon. I have been delighted and very much interested and glad I came, and I wish to extend to you an invitation to come to Waupaca, either collectively or singly. If you wish to appoint a meeting there, we will try to do what we can to interest you, and make you feel at home.

Mrs. Carey of Appleton then read report on behalf of her Society:

REPORT OF GRAND CHUTE HORTICULTURAL SOCIETY.

Organized in 1871. Number of members, 56; number of meetings past year, 4; number of members of State Society, 17; no new fruit originated. Annual meeting held Jan. 3rd, 1901, with an attendance of 90 persons. The following officers were elected for the ensuing year: President, C. A. Abbott; vice

president, W. Roblee; secretary, Carrie M. Finkle; treasurer, J. P. Buck.

The Society took in 14 members during the year and lost by death 4 members.

Mrs. J. B. CAREY,
Delegate.

Report of Eureka Society was read by Mr. Bradt.

Mr. President, Officers and Members:—In response to call for report, and in answer to recent questions by Secretary J. L. Herbst we will reply that:

1st. Our organization is named The Rushford Horticultural and Improvement Society, situated for meeting purposes at Eureka, which is a central location for our membership, drawing, as we do, from adjacent towns.

2d. We were organized Feb. 15th, 1893, in accordance with "rules and regulations" formulated by the State Society, furnished us by Sec. B. S. Hoxie.

3d. We have now 100 members, inclusive, of husbands and wives, the latter, like the vital forces of modern churches, are our reliance and pillars of hope.

4th. We have held the past year twelve regular and three special meetings. Our days of meeting are on the first Saturday of each month.

5th. Of members of State Society we have 3.

6th. Of new varieties of fruit originating in our locality worthy of propagation there are five of apples. All have undergone the tests of many severe winters.

1st Seedling.—Apple called the *Brewer* (1), originating on the farm of J. H. Brewer, on clay land and northern slope. Is a winter apple and fine keeper. Of medium size. Better quality than Pewaukee. Rich in appearance; sprightly in flavor, marks of which lead to the conclusion that it is a seedling of the Duchess of Oldenburg.

2d Seedling.—Apple called the *Rounds* (2), originating on the farm of a Mr. Round, on sandy land, no special exposure, but quite high. Very delicious, sprightly flavor, medium size,

splashed and striped with red on yellowish ground. Very handsome and inviting in appearance. Season follows Duchess of Oldenburg.

3d Seedling.—Called *Carrie*, found bearing in a cemetery across the road from an orchard of 40 years' standing, one-quarter of a mile south of the Round's tree; good subsoil. Medium to large size, greatly resembles Utter's red in color, but larger. Quality good; season, December to February; tree hardy and productive.

4th Seedling.—Called *Lincoln*, found in highway; medium size; green with red blush on one side. An excellent cooking apple and good to eat out of hand; season, December to May; tree vigorous, hardy and productive; originated in a brisk soil; no strongly defined exposure.

5th Seedling.—Named *Fameuse Sweet* (3); of undoubted Snow apple stock, which it resembles to a remarkable degree in form and size. Color, deep red; flesh, white; skin, thick, sweet; quality, most excellent and delicately palatable; season, December to May; tree hardy and productive, and really one of the most desirable apples. The original tree grew on top of a ledge of limestone.

6th.—Called *Parmetta* by family where grown; found in an orchard row on low, undrained, stiff clay land, flat, no especial exposure; of large size, greenish color, changing to red; late in season; no small apples; quality extra. Very productive, fruit hanging in masses, and is a beautiful sight. Season, December to May. Tree not fully tested, but believed to be hardy. (4)

This closes the answers to the secretary's queries, dwelling on these descriptions, because of a line of work our society is devoted to, viz., to bringing out and testing promising seedlings, and giving premiums to those of merit, and of the many thousands of our seedlings the above five, and the one called *Parmetta*, we heartily endorsed as a society.

Our work in floriculture is one of activity and success. Flowers are ever present at our meetings. A mid-summer flower show is always held and plants are given to school children who compete for prizes.

In the month of November we have our chrysanthemum

shows, awarding premiums for excellence of exhibit of them, and other flowers and plants, with needlework, specimens of art and farm products.

Our finances are good, and though we have many regular topics for discussion we always are good-natured.

We planted our society on almost the outer borders of flower culture, and in our eight years of existence the expansion of floral civilization has proved very much of a success within our society limits.

All of which is respectfully submitted.

H. H. G. BRADT,
Secretary and Delegate.

Our officers for 1901 are:

President—A. A. Parsons.

Vice-Presidents—Mrs. S. G. Floyd, Mrs. J. H. Brewer.

Recording Secretary—H. H. G. Bradt.

Treasurer—Mrs. M. E. Peroniman.

Assistant Secretary—Mrs. Mae L. Bradt.

President of Chrysanthemum Show 1901—Dr. T. E. Loope.

Mrs. Trelevan read report of Omro Society.

REPORT OF THE OMRO HORTICULTURAL SOCIETY FOR THE YEAR 1900.

Omro, Wis., Jan. 14, 1901.

The past year our meetings have been largely attended and much interest manifested. We have successfully held another chrysanthemum show and fair, which far exceeded our expectations, and we find it is creating an interest which speaks well for the work done in this society. The annual meeting was held Jan. 11, 1901, and the following officers elected:

President—E. H. Graves.

Vice-President—A. B. Frees.

Secretary—Mrs. Jos. D. Treleven.

Treasurer—Mrs. Nellie Smith.

Executive Committee—Frank Barnett, S. O. Pingry, Mrs. J. Stead and Mrs. C. Oak.

Meetings held the second Friday of each month. Membership, 78.

Mrs. Jos. D. TRELEVEN,
Secretary.

Mr. Pendergast was called upon to give a report from his state.

Mr. Pendergast—I do not know of anything special that I can report upon.

Mr. Bradt—How many societies have you in the state?

Mr. Pendergast—I do not know; they do not report. What corresponds to your societies here are what we know as the Woman's Auxiliary. They have their societies scattered over the state, and they have their meetings at the same time; we give them an afternoon out of the week in which the annual meeting is held, and attend to their business and the reports are presented during that convention.

REPORT OF SAUK COUNTY HORTICULTURAL SOCIETY.

Baraboo, Wis., Dec. 24th, 1900.

The Sauk Co. Horticultural Society held a meeting Dec. 11th and elected the following officers: President, Wm. Toole; vice president, Chas. Hirschinger; secretary, Chas. L. Pearson; treasurer, Mrs. E. G. Marriott. The membership is increasing and plans are being perfected to hold a big horticultural convention in Baraboo February 13th and 14th, 1901. M. F. Foley was elected delegate to the state meeting at Oshkosh. Franklin Johnson, A. Clarke Tuttle, Mrs. H. Kelley, M. F. Foley and Wm. Alwin are members of the executive committee.

C. L. PEARSON,
Secretary.

REPORT OF WAUPUN HORTICULTURAL SOCIETY.

Waupun, Wis., Jan. 10, 1901.

Mr. J. L. Herbst,
Sparta, Wis.

Dear Sir:—Last Monday we held our annual meeting and elected officers as follows:

J. Gysbers, president; D. Allan, vice president; H. D. Meenk, treasurer; W. M. Tichenor, Secretary. Several meetings have been held during the past year, and horticultural topics discussed. At the October meeting there was a good showing of apples. We have only about ten members on whom we can depend, as fruit-growing is carried on only on a small scale, dairying being the principal occupation of the majority. I do nothing in the line of fruit growing except for my own use.

Mr. J. Meenk was elected a delegate to the Oshkosh meeting.

Enclosed find fifty cents for membership fee to State Society.

You may send me a few reports if we are entitled to them, we paying express charges.

Accept thanks for report sent.

Yours truly,

W. M. TICHENOR.

SECRETARY'S REPORT OF THE LAKE MILLS
HORTICULTURAL ASSOCIATION.

The Lake Mills Horticultural Association held its first meeting on the 15th day of June, 1900, and organized by electing Robert Fargo president, George J. Kellogg vice president, and F. E. Parsons secretary and treasurer.

By previous arrangement there was a fine display of small fruits and flowers on which a number of premiums were awarded.

It was voted that the president, vice president and secretary constitute an executive board, and that to this board be left the

drafting of a constitution for the Association. The membership fee was fixed at 25 cents for men and women, excepting the wives of members, who should be admitted free and enjoy all the privileges of other members.

At this meeting Mr. Kellogg gave a very interesting talk on Fruits and Flowers, and on the uses and proper application of insecticides.

The meeting adjourned, subject to call of the president.

The second meeting of the Association was held on the 13th of July, 1900, at which time the constitution prepared by the executive board was read by the secretary and adopted.

There was an excellent display of fruits and flowers and quite a number of premiums awarded.

Mr. George J. Kellogg gave a very instructive talk on budding and grafting, illustrating the processes and answering many questions. He also gave instructions in the propagation of currants, and other fruit shrubs from cuttings.

The third meeting of the Association was held January 8, 1901, at which there was a good display of apples made by Mr. Kellogg, representing nine varieties, on which he gave an instructive talk, giving their nativity, originator, quality, productiveness, keeping qualities and best methods of culture. He also spoke of pear and plum culture, and the worthlessness of the Tree strawberry.

The secretary, Mr. Parsons, gave his happy experience in pear culture in Lake Mills, having now grown the Flemish Beauty, the Vermont Beauty and the Keefer, all planted in 1895, one Keefer giving fruit the fourth year, and one yielding 1½ bushels of fine fruit the fifth year, and the Vermont Beauty bearing a dozen pears the fifth year; and all doing well. He also gave his experience in the cultivation of the Tree strawberry, which he said was very easy of cultivation, an all summer bearer, but the fruit worthless.

George J. Kellogg was chosen delegate to represent the Association at the state horticultural convention to be held at Oshkosh January 14th to 17th, 1901.

The meeting adjourned subject to call of the president.

Name of Society, Lake Mills Horticultural Association;

number of members, twenty-two; number of meetings held, three; members belonging to State Society, two; no new fruits originated.

F. E. PARSONS,
Secretary.

Of New Fruits at Lake Mills, Wis., January, 1901.—Mr. Ezra Carr has produced a seedling peach tree, about six years old, healthy and vigorous; the fruit is of extra size and quality, an early variety freestone and its enormous size would indicate that it would be a valuable variety to propagate. The Bishop Winter apple, Prof. Taylor of Washington, D. C., says "resembles Hubbardston's None Such, but better in quality and worthy of propagation." Lean's Red Winter has much to commend it for trial; the tree is vigorous, hardy, carries a thick, healthy leaf. This is characteristic of 10 other seedlings,—one is an August apple of very choice eating, one resembling Ben Davis in appearance. These seedlings were selections of a lot grown from Cider Pommace planted in 1884, and have now been bearing for four to six years and give promise of value.

GEO. J. KELLOGG.

CONDITIONS AFFECTING FRUITFULNESS.

E. S. Goff, University of Wisconsin.

Some years ago I read a paper before this Society on this subject in which I confessed that I knew very little about it. My excuse for asking your time to consider the same subject today is that after much thought and some investigation the problem seems much clearer. I hope to offer some hints that may be applied with profit to practical fruit culture.

I shall attempt to show that there is a definite relation between growth and flower formation in our fruit trees. If I can do this, it must follow as a corollary that we can control flower formation to the same extent that we can control growth, and a rift appears in the clouds at once, for most of our fruit growers

feel competent to control the growth of their fruit trees pretty well.

My first proposition is, that during the warm season the causes that favor growth are opposed to flower formation, and vice versa. As evidence of the truth of this statement I mention:

1st. While growth is most active flower formation is at a standstill, and when growth ceases, flower formation begins. This is true not only of perennial plants, but of most biennial and annual ones as well. In Indian corn, for example, growth is rapid from the time the plants are well started until the tassel forms; then growth ceases and the flowers form. The same is true in tobacco, in the grains and grasses and in most strictly annual garden plants and weeds. It is also true in biennial plants as the beet, carrot, cabbage and we now know that it is true in our fruit trees also.

2nd. An artificial check to growth causes the formation of flowers. It has long been known that pinching the tips of growing shoots of fruit trees early in the season often causes the formation of flowers. Root pruning will do the same. The florist causes his plants to bloom by drying them off, or allowing them to become pot-bound. All of these operations check growth.

Flowers form then when growth ceases, provided the weather remains warm enough. It does not seem to matter much what causes the growth to cease. It may be from the direct act of the cultivator; it may be from weather conditions, or it may be from simple heredity. In all cases the flowers form provided the weather is sufficiently warm, and provided the plant is old enough to flower.

3rd. The percentage of buds that form flowers in any given part of the tree is inversely in proportion to the amount of growth in that part. On the very short branches, commonly called fruit spurs, all or nearly all of the buds form flowers. As the annual growth becomes longer, the proportion of buds that form flowers is less; on the longest growths of rapid growing trees we find fewest flower buds.

4th. The more times the current of sap is diverted by branch-

ing, the shorter becomes the growth and the more likely are the buds to form flowers. Flowers rarely form directly on the main shoots of our fruit trees. They often form on the first branch from a main shoot, especially in the stone fruits. In the apple and pear we are more sure to find them removed two or more times by branching from the main shoots.

In this connection it is well to consider the reasons for the growth period in our fruit trees. Why do they start into vigorous growth in spring, and why does this growth come to an end before the warmest part of the season arrives? It is probably largely a question of water supply. During late fall and during winter, while the trees are without leaves and the air temperature is low, evaporation from trees is almost wholly suspended. The roots of the trees are protected by the soil and do not undergo so great a comparative reduction of temperature as do the branches. They continue therefore to perform their function of absorption whenever the soil in which they are is not actually frozen. It follows that the tree gradually fills with water, and by spring is gorged to its fullest capacity. The profuse discharge of sap from wounds in many trees in late winter and spring is familiar to all. When the weather becomes warm, the buds are in the best possible condition for growth, being gorged with water themselves, and attached to branches that are also gorged. The raising of the temperature of this water causes it to expand, and so increases the pressure. The roots, too, are in a soil that is often nearly saturated with water. But as the leaves unfold and the weather becomes warmer active evaporation is resumed and the water supply in the wood is rapidly depleted. The roots are still absorbing, it is true, but they are unable to keep up with the increasing evaporation. Especially in large trees, the distance from the root tips, where the water is absorbed, to the leaves, where it is evaporated, is so long and the water has to pass through so many angles in its tortuous passage that it can not reach the leaves fast enough to make good the loss from evaporation, and to supply the forming cells for any long time, hence the growth rapidly declines, and generally comes to a standstill before mid-summer. Then follows the flower forming season. As growth declines the sap

becomes more concentrated, and more stocked with prepared food, which appears to be the necessary condition for forming flowers. That his storing of the sap with prepared food is the indirect cause of the formation of flowers we may demonstrate experimentally. It is well known that girdling a thrifty shoot of a young apple tree early in the season will often cause the buds above the girdle to form embryo flowers that same season. The woody parts of a tree are able to grow only as they are supplied with food prepared in the leaves, and this food is transported through the inner layers of bark. If then we remove the inner layers of bark for a narrow space, we intercept the current of prepared food, and compel the food material to remain in the part of the branch above the girdle. It is well known that the crude sap that passes to the leaves from the soil moves chiefly through the so-called sapwood. If the girdling only reaches to the surface of the wood, the current of crude sap is not cut off. The result is a congestion of prepared food in the part above the girdle, and the sap soon acquires the flower-forming quality. To sum up, we may make a general proposition which we will do well to commit to memory, viz., a surplus of water in the tree results in growth; a surplus of prepared food results in flower formation.

Now that we are prepared for it, the practical corollary to these propositions comes without calling. If we provide the conditions for healthful growth and then hold this growth in moderate subjection by wise treatment, we shall have a normal and regular formation of flowers and fruit. We must not fly to the opposite extreme and conclude that because growth is opposed to flower formation, therefore all growth must be suppressed. Normal growth is absolutely necessary to the continuance of the tree, for we must remember that the same bud can blossom but once. If our tree is to increase in productive power, it is imperative that the crop of new buds shall be larger than that of the buds that blossom. If we have normal growth, uniformly distributed over the tree, the flower formation will take care of itself.

Thus far I have dealt with principles. Let us now proceed to briefly apply these principles. It is practicable here to apply

them only in a general way. The ultimate application of them to the conditions of the individual fruit tree must devolve upon the fruit grower himself.

Obviously to provide for normal growth is the problem in hand. How shall we do this? I answer in three general ways: 1st, by choice of location and soil; 2nd, by treatment of the soil, and 3rd, by treatment of the tree.

Choose a location that is well drained, for excessive water in the soil tends to excessive and prolonged growth. Choose a location that is freely exposed to cool breezes in summer, for excessive heat tends to excessive growth. Do not these recommendations correspond with the teachings of experience?

Fertilize the soil sufficiently to provide all the needed requirements of plant growth, but in our climate carefully avoid excessive nitrogen. Wood ashes, applied in early spring, supplemented by a nitrogen-forming cover crop will generally be best where the ashes are to be had. Where farm manures must be used, choose those of moderate richness, have them well decomposed and apply them early in the spring, that they may be available for the early growth. Cultivate the ground early in the season, to favor the growth period. Sow with a cover crop at or before mid-summer to prevent the second growth in late summer.

Prevent insect and fungus injury to the trees by all available means to promote healthy foliage. I can not go into details here.

In pruning we have most to learn, and here I must introduce two principles to which I have not before alluded, viz.: 1st, that plenty of light is absolutely necessary to the formation of flower buds, and 2nd, that the more a branch tends to the horizontal the more likely it is to form flower buds. We should therefore favor horizontal branches, and discourage vertical ones, with the exception of the leader. We should insist on the growth being distributed over a large number of branches and should promptly pinch, in early summer, all shoots that incline to grow more than a foot long. We should promptly rub off all superfluous shoots. This means that we must do much summer pruning, and in some cases, we must do less early spring pruning.

To make this subject clearer, I will introduce in conclusion what will be to most of us a new conception of the cultivated fruit tree, to which I invite your earnest attention.

We have been accustomed to regard the fruit tree as the unit of production in the orchard. But the tree is a composite and intricate organism. It is more just and tends to simplify our conception of the proper methods of treating the orchard to consider the bud as the unit of production. The buds of a fruit tree are in a sense distinct organisms. They are separately born. Each has a definite and distinct life history. Its mission is to grow for a time, to produce other buds by division of itself, for the perpetuation of the trees and finally to flower, to fruit and then to perish.

From this point of view the fruit tree represents a crop of buds, or more accurately two or more crops of different ages. Each season one of these crops of buds finishes its course by flowering and fruiting, and another crop is brought into existence to take the place in due time of the crop that has fulfilled its mission.

Now the fruit grower's problem is easily stated. It is to so treat his trees as to have the largest number of buds in condition to fruit to their best capacity each season, and at the same time to bring on other healthy buds to perpetuate the life of the tree, and to fruit the next and succeeding years. If his tree is not yet fully grown, it is imperative that the crop of young buds that he brings forth shall be larger than the crop of buds that he permits to fruit. Barring only the question of winter killing, if his methods of culture are correct, there would seem to be no more reason why he should fail in having his crop of flower buds ready to open each spring than that the nurseryman should fail to have a crop of salable trees ready to supply his patrons.

Let us carry the comparison between the fruit tree and the nursery farther. We should at once condemn any system of nursery practice that permitted a few of the strongest trees to crowd the majority of the weaker ones out of existence. But is not such a system going on in most American orchards today? The majority of the buds in many, if not most, fruit trees are starved or smothered out of existence by their stronger neighbors,

while the weaker buds, in turn, harass their stronger neighbors to an extent that largely interferes with their fruit capacity.

The conception of the bud as the unit of production is not wholly new, though it will be new to many American fruit growers. In Europe the fruit tree has long been cultivated more or less from the standpoint of the bud. But the pottering methods of training and tying fruit trees practiced in European gardens are impracticable in our land of high-priced labor and extensive culture. And yet the bud standpoint is unquestionably the correct one. What then can we do? We must make an economical compromise between their slow and tedious methods and our happy, go-lucky no-system. We must find a way of pruning our trees so as to better control the growth and to place the buds more on an equal footing as regards light and space.

Then, with our improved spraying methods we should be able to place our fruit crops on a much surer basis, and to grow fruit of much higher average quality.

Prof. Van Deman—I would like to say a little bit on this subject. I think that is the true principle,—in fact, that is just in the same line of the discussion which we have just had, and that is, to give the bud a chance, and for you to give the bud a chance you will have to give the tree a chance. That is certain. It takes a lot of light and free circulation of air and so on to develop the bud and the flower and the fruit, and if you do not give the tree a chance, those conditions can not exist.

SHRUBBERY FOR THE LAWN.

H. C. Christensen, Oshkosh, Wis.

It is the duty and within the reach of nearly every property owner to make his place pleasant and home-like. Possibly nothing goes farther towards bringing this about than a well-arranged and nicely kept lawn. How often we see places, even with trees about them, where there is an apparent vacancy which only a judicious disposal of shrubbery will fill. There is a certain stiffness about the house or grounds that a bush set here and there will soften and relieve.

As a general rule very little shrubbery will be needed in front of the house, as an unbroken turf smoothly clipped gives an impression of size and breadth that is pleasing to the eye. The back and sides, however, will afford an opportunity for indulging ones taste and fancy for shrubbery. In the country a windbreak of trees is or should be planted to the north or west of the house, according to the location on the street. There trees should be planted far enough from the house to allow of the planting of shrubbery between. This not only adds to the effectiveness of the windbreak, but enhances the beauty of the landscape, the trees forming a background for the taller shrubs, and these in their turn for the smaller and more delicate varieties. Where space is not limited, massing of varieties is more effective than single specimens. It is a good idea to plant tall perennials like the Golden Glow, Hollyhock and Sunflower between the shrubbery to make a show of flowers in the late summer and early fall, as the number of late flowering shrubs is very limited. Most of our hardy shrubs will grow with little or no cultivation; they will, however, amply repay care and attention bestowed on them. The ground about them should be kept free from weeds and grass. A mulch of coarse litter after freezing weather comes will prove of great benefit. The shrubs recommended in the Annual Report of this Society are nearly all of them hardy enough to survive even our severest winter without protection. It is safer though to cover such varieties as the

Spireas and Wegalias and one will be repaid for the time and labor spent in increased vigor and size and quantity of bloom. The idea of cost need not deter any one from planting shrubbery, for the fields and woods stand ready to deliver up their treasures for the coming after. Our native shrubs are a class that have been too long neglected. Some of them are worthy of a place on every lawn. What possibilities many of them present through careful selection and hybridizing. Take, for instance, the hawthorne, anyone who has seen the mounds of white, pink and rose color that the double tender varieties make when in bloom will have some idea of the dormant possibilities of our native varieties. Let us plant our shrubbery, not in a haphazard way, but with careful thought as to harmony of color and arrangement. Although we may never be able to reach the ideal of what a lawn should be, this thought should encourage us, that in every step we make towards this ideal, we are benefiting not only ourselves but the general public as well.

PERMANENT OR TEMPORARY HOME FOR THE WINTER MEETING.

F. C. Edwards, Ft. Atkinson, Wis.

I will discuss the temporary home first. Why we are at Oshkosh is because a cordial invitation was given the Society to hold its winter meeting here. Some of the Society think it shows partiality to hold our winter meetings continuously at one point. Such fertile sections of our state as that adjacent to Oshkosh, Appleton, Green Bay, Sturgeon Bay, Ripon and Waupaca,—why not come to them once in a while in this way and cause them to think as members of the family they are kindly remembered? People at this time of the year have leisure to attend meetings, and by doing this perhaps we are interesting people who previously never knew us. By moving into these different sections we introduce new blood, new ideas, and perhaps keep us out of the ruts and they (becoming

interested) as a consequence become staunch members of our Society. Horticulture is a broad term in its truest sense; I imagine it embraces all tree and plant life, "landscape gardening," home decoration, etc. I am glad any year to see new topics placed upon our programs and perhaps in our visitations we may get new ideas and new subjects are brought out in discussion. I hope above all our contributors may bring system into all their experimental efforts, with a definite object in view. The actual holding of a winter meeting in a fruit producing section and placing fruit discussion within the people's easy reach, might induce many to come and there would dawn upon them the fact that there was a state fruit organization. We want to put ourselves aright before the people of our state and not be known as a band of nurserymen met for business purposes, as we are sometimes credited,—but are met to discuss subjects that the people could profit by an attendance. Directly in this line is the thought I have expressed so often,—we are not in close enough touch with the people. Shall we get in touch by visiting different localities in our state? Is this accomplished in part or whole in the sections we have so visited? And do we gain a kindlier feeling between members by so visiting?

I have said often our men that make laws and appropriate money would as quickly give us \$3,000 as \$1,500 per year if we could show these men that this money had been wisely expended by handing it back in benefits to the people who paid it. How can this be done? Well, by giving them our experience to guide them, and this must be done in a wholesale way, in all the agricultural papers of our state and sister states, if they so desire. The people are glad to get such information if so condensed they can read and digest it. In our publications now we reach only a very few and this is not economy to us or to any one. And I hope our executive board will consider well the best way to put us in close touch with the people of our state on horticulture. I hope they will prove that they are equal to this and other questions. Why the Farm Institutes have been so potent for good is because the practical successful men went to the people and talked these farm topics over with them. At the present time the fact remains not one in 25 fruit growers

for market attend our meetings or belong to our Society. Can this be remedied? Would the visiting them be beneficial to them or us? Are all states in like condition? We will watch our visit to Oshkosh with a great degree of interest; if we can not get some of these questions answered in results by our coming into this fertile section there will be no use putting forth effort in other places.

I am very decidedly in favor of holding our summer meetings in various sections of our state in which there are fruit interests of importance; but for a moment consider the proposition of having the winter meetings at Madison and have a permanent home.

Madison is located in south central Wisconsin, and being our capital, deserves to be seriously considered as the place for a permanent home. Here in the winter the different societies meet to transact their business, viz.: Cheese Makers, Insurance Co., Agricultural Association, Bee Keepers and kindred meetings. Madison is easy of access from nearly every point by railroad. It is much easier to get special rates to Madison than most points as a consequence. Our state has always given us the use of a room in the capitol, heated, nicely lighted, and furnished free. When the legislature is not in session they have given us the use of the senate chamber. Besides this they have given us the use of a room to exhibit the show of fruit. We must remember this is all gratis and when we go to other points to hold our meetings it costs somebody something to furnish all these items. Hotel accommodations, as a rule, are much better at Madison than most cities (Oshkosh of course excepted in this respect).

In our sister states the Horticultural meetings are usually held at their capitol building. Iowa has given to their Horticultural Society a room in the capitol building on the ground floor, and the name is inscribed on the door, Horticultural Room. Our state ought to do the same and would if we would at this time properly present our claim. The removing the "state historical collection" to the Historical Library building gives room for us to step in and make our claim valid. In this should be our literature, records, and all the belongings to our Society. We, as a Society, should keep this room open all

the year, except holidays and Sundays. You say, Who should keep this open? Properly the secretary or the person this Society should elect. Our secretary should receive under this plan double his present salary or more.

We should discontinue the Wisconsin Horticulturist or merge it into a wholesale distribution of knowledge edited by a competent secretary. Under this plan we are in condition to get all acceptable experience or writings of value published weekly by our agricultural papers and be read by hundreds of thousands of people in our state instead of about 1,000 readers, as it now does. Is this not a clear business proposition? All of our writings could then go out as extracts from reports, experimental stations, and timely writings of leading horticulturists of this and other states, or we can have an official organ the same as Iowa has Fruitman. All this should come from our home at Madison and out of the room and edited by the secretary the state has not yet given us. The Society acting from this home would have a standing worthy the name and very much improved from what it now has. Our legislature could see that we were doing good work with funds and with our asking aid us still more in appropriation in carrying on good horticultural work.

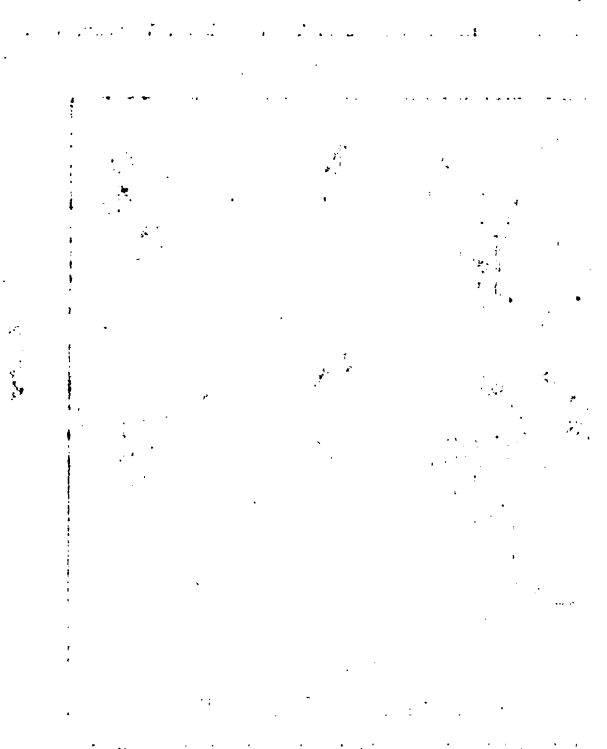
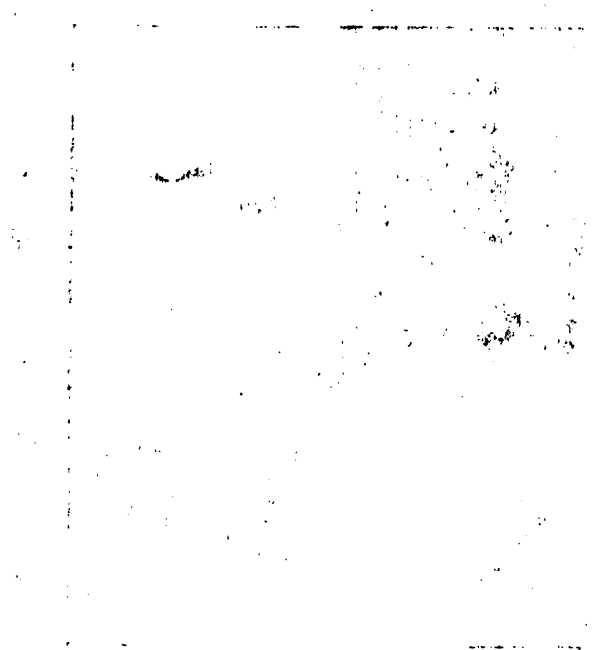
It is quite important at this time to ask and get, if possible, a permanent room or home at Madison and we ought to be there now looking after the matter. The holding our winter meeting at Madison gives us certainly a prestige. We are in touch with representatives, so we can make them feel the importance of our organization and its ultimate objects. By meeting them we can make our wants better known and stronger felt. Our officers can deal with the state officers with more ease and economy. We are very lame this year in the fact that we can not make a creditable exhibit at the Pan-American congress, held at Buffalo next summer. This would be a grand time for Wisconsin to bring out and show some of her justly famous seedlings. We are proud of our Northwestern Greening, Wolf River, Windsor Chief, McMahan and other apples. The small fruits that originated in our state deserve a mention and a showing with our apple seedlings before the eyes of the world. And we

ought to be in session at Madison now to see if anything can be done with or without the legislature to put us all right on this matter.

In conclusion, have a room in the capitol building marked "Horticultural Room." Have a representative man as secretary to keep these rooms open 300 days in the year so visitors could have free access to this room and its library and the secretary at any time. Have the secretary there for business to work up the interests on horticulture and the Society in all legitimate ways; to edit or collect all literature that is published by our Society, to visit local societies and fruit producing sections. For we must keep abreast of the times or get left.

Respectfully submitted,

F. C. EDWARDS.





Seven-year-old N. W. Greenings. Wisconsin Trial Orchard, Wausau, Wis.



Seven-year-old Longfield. Wisconsin Trial Orchard, Wausau, Wis.

TRANSACTIONS
OF THE
Wisconsin State Horticultural Society.

ANNUAL SUMMER MEETING

Madison, Tuesday A. M., August 27, 1901.

President E. T. Loope called the meeting to order.

Prayer by Rev. Mr. Minor.

The President:—Ladies and Gentlemen, Members of the State Horticultural Society:—I have prepared no address. It seemed to me that at this time it was not exactly the thing for me to make a formal address. I am not eloquent. We have come here for business and pleasure. There are some things that especially engage our attention at this time. One is that we have taken a new departure in the time of our summer meeting and that we have especially for our consideration plum culture, and that is by the kindness of Prof. Goff, as I understand it.

There is another subject that claims our especial attention and that is the exhibit at the Pan-American exposition. You all know that we decided last year to commence our exhibit on the first of September. The president of the Wisconsin commission wrote me some time the last of June that he thought that it would be for the benefit of the Society for me to go to Buffalo and be on the ground and see things before we expended anything. Acting upon that suggestion I did go down about

the twentieth of July and in looking over matters and in talking with the superintendent of horticulture there I found that in order to hold our space, or to hold any space, that we must immediately occupy the ground. It was quite a serious thing for me to decide upon at that time and I felt the responsibility very greatly. However, I did decide owing to the pressure that he brought to bear and selected space and contracted for the installation and wrote a few letters home and came back in a considerable flurry in my own mind. Since that time we have installed our exhibit and from all that I can hear on every side from those who had seen that exhibit they say that it does credit to the state of Wisconsin, and that is one of the things that I have to be grateful for.

I have to be grateful for another thing, and that is the cordial support that has been rendered in this new departure by members of the Society who have been called on to do work and to help. We have had a most enthusiastic and generous support and no man can feel more grateful than I over that. I think that the continued success of that exhibit there is what the Society should bend its utmost efforts to; that we ought to make that an educational exhibit for all the other states and show them that Wisconsin can do something.

I feel a great deal of enthusiasm in the work of this Society, and I believe that even the great majority of the members of the Society do not know the far-reaching effects of our work. I think that is generally under-rated by the members of the Society, and I believe that we are extending a beneficial work to the people of Wisconsin and we ought to increase that thought that our business is work and I think also that the State Society should make itself more manifest, to show the people of Wisconsin that we are doing something and that something is for the good of the whole people. We will now proceed to business.

The following committees were then appointed:

Committee on Awards—Mr. W. Hanchett, Sparta; Mr. Smith of Janesville, and Mr. Edwards of Ft. Atkinson.

Committee on Reception—Mr. L. G. Kellogg of Ripon, S. H.

Marshall of Madison, and Mr. C. A. Abbott of Appleton, Wisconsin.

Committee of Awards on Flowers—Mrs. Jos. Trelevan, Mr. Perriam and Mrs. Hockins.

APPLE OUTLOOK FOR EASTERN WISCONSIN.

By A. A. Parsons.

Mr. President, Ladies and Gentlemen of Wisconsin State Horticultural Society:—In making my report on the outlook for apples in eastern Wisconsin to be of much interest or benefit to you I must necessarily take other grounds than a commercial standpoint or it might be summed up as a failure simple and pure, for I would at this date, August 1st, place the outlook at only 15 in a scale of 100, very light, as you readily see. I might place Longfield at 75, Duchess 10, Wealthy 15, McMahan 10, but other varieties would be placed at 5 and even less. At blooming time I considered the outlook to be good for 25 per cent., but owing, as I believe, to an excess of moisture and severe wind storms at that time and since, I would now reduce the above figures to 15.

I believe our worthy secretary had a different object than mere percentages in asking me to take this subject. Perhaps it was to further the welfare of our Pan-American exhibit, and in this connection I wish you to consider it.

I have spent some time in visiting different orchards and have written numerous letters to the largest growers in the eastern part of the state that I might give you a correct report as to the outlook at this time.

I will give a few facts which I hope may be of some benefit to our worthy corresponding secretary in his search for exhibits. I believe I shall be found correct, barring cyclones and hail storms, from this date out. As to the possibility of cyclones or hail I also bar that, for, as our good president has often said, "Hope springs eternal in the horticulturist's breast."

We have the apples, not in abundance but in quantity sufficient to make a splendid display. In eastern Wisconsin the fruit is widely scattered; many orchards are almost barren, while adjoining orchards apparently under the same conditions are quite fruitful. This will necessitate more hustling on our part, but with proper arrangements the work of collection will not be serious or very expensive. Eastern Wisconsin can furnish a good supply of the following varieties: Yellow Transparent, Duchess, Longfield, Wealthy, McMahan, Snow, Hibernial, Scott's Winter and Haas and a limited supply of Gano, Anisim, Gideon, Ben Davis, N. W. Greening, Fameuse Sweet, Pewaukee, Sops of Wine, Fall Orange and Switzer.

In our standard varieties we shall be short on Tetofski, Willow Twig, Wolf River, Newell's Winter, Alexander and Plumb's Cider.

Judging the quality at this date, I believe our apples will be found first class.

Mr. President and Members, as you all know I am at present on the field of action at Buffalo doing my best for all. Perhaps a word about our exhibit would be of some interest. Judging from what our neighbor states tell me and from the interest the visitors take in our exhibit I feel that my efforts with the help of others have been a complete success. We have on our tables what would make 300 plates of apples, consisting of about 30 varieties. We have also several plates of plums. Another very satisfactory condition is that all fruit received is improving in quality, which I hope will continue from now on. From what I have observed of the outlook for fruit I am confident that Wisconsin will not only hold its past honors as an apple producing state, but will add new laurels to its history, in this an "off year."

In conclusion I wish to say that I hope that a spirit of enthusiasm, which has so far shown itself by your cordial support of the action of your officials, will continue unabated and increase as the time lengthens and that no carping spirit will creep in to mar the work of the Society, for I believe every one is trying to do his level best for the common good of all. Let each one have the same pride, the same interest in our exhibit,

that he would have were it a personal one. The success or failure of our exhibit depends largely upon a few who have the active work to do. As the old boys used to say down there in the sunny south land when face to face with the enemy, "Don't get weak-kneed along the line there, comrades, but keep a stiff upper lip and we will win this battle." Do this, Brother Barnes, Toole, Kellogg, Edwards, Tarrant and the rest, and although we may have some serious obstacles to contend with, chief of which is our "off year," yet with our united efforts along the whole line I can assure you a success. We will have a display of fruits that has caused many and will cause many more of our people who will visit the Pan-American this fall to be proud of Wisconsin, proud of your efforts as a Horticultural Society, and you, Mr. President, and you, brother horticulturists, will have achieved honors for our state more precious than medals even of gold.

APPLE OUTLOOK FOR WESTERN WISCONSIN.

J. J. Menn of Norwalk, Wis.

In the presentation of this paper I can not report the outlook as favorable. In the cultivation of fruit we are often sadly disappointed in the bearing qualities of our trees. The condition of our trees may be good, the season favorable and the trees full of blossom, the fruit may even set on the trees, but the crop may be a complete failure and this we find is the case this year in western Wisconsin with few exceptions.

Our first business should be to find the cause of our failure. One year ago we had one of the largest apple crops known in western Wisconsin. Trees bore too heavily and lacked vitality to mature fruit buds for this season's crop, and I venture to say if the soil had not been so full of moisture last fall many trees would not be alive today. But the winter was favorable and trees started finely in the spring, with a very heavy foliage.

But too many trees lacked the fruit buds. During the critical time of bloom the weather was unfavorable, being cold and dry and fertilization was checked for lack of bees working on the blossoms. The May frosts injured the crop some on low locations, but not on high. The extremely hot and dry spell in July caused the fruit to drop. The early apples were poor in quality and the late varieties are not much better. The drouth is now so severe that they can not mature and lack in size and color. Many trees will be ruined by the drouth. Insects were numerous, but blight has done no damage this season.

Last year car loads of apples were shipped from nearly all railroad stations, selling at from 25 to 50c per bushel. This year there are not enough for home use, prices running from 75c to \$1.00 per bushel. And fancy prices will have to be paid for choice winter fruit.

The apple orchards in western Wisconsin are small compared with those in the eastern half of our state. We find from 25 to 100 trees the average size of the farmer's orchards; but very few exceed 1,000 trees. A great number of trees have been sold within the last two years, including cherries and plums of very many different varieties.

It is hard for me to say what varieties are doing best, so many of the trees lately planted are not yet in bearing. There are many fine sites and locations suitable for commercial orchards. If only some of our young men would take hold of the business it would certainly prove, in the near future, a better investment than a Klondike mine. With our able Prof. E. S. Goff doing such faithful work in horticulture for our boys, our state ought soon to be foremost in apple growing in the northwest.

DISCUSSION.

Mr. Edwards—I would like to ask the gentleman what he gives as a reason that the apple has not borne this year, the principal reason.

Mr. Menn—We find that so many of our trees that bore so

heavily last year have no fruit on to speak of this year, and even those that did not bear last year, a great many of them are not bearing. I think that one cause is, as I have stated in my paper, during the critical time of bloom, when the bloom was at its best, we have had such cold dry weather that pollenization was not perfect.

Mr. Edwards—You say they were weak in vitality, why is that?

Mr. Menn—The trees by over-production caused that. Those trees that bore so heavily last year did not show hardly any fruit buds this year with us.

Mr. Edwards—How will you remedy that?

Mr. Menn—The only remedy I can think of is to pick the fruit to do away with over-production.

Mr. Edwards—How far along would you let the fruit be before you pick it off?

Mr. Menn—If I were to pick the fruit I would pick it when it got to be about the size of a common plum.

A Member—Do you suppose it would make any difference, then, if it gets along that far it would hurt the tree for another year.

Mr. Menn—The fore part of June we have that size, and I do not know as it would injure the tree; it might to a certain extent.

Mr. Christianson—Why is it that we have trees that did not bear last year and were full of blossoms this year and still do not have any apples?

A Member—There are some varieties that bear alternately.

Mr. Christianson—I think we always speak of it as an off year with us around Oshkosh. I would like to know from those that have tried picking off the fruit when it was small, if it would insure a crop the next year.

Mr. Menn—I think it would certainly increase the vitality of the tree if the fruit were picked.

The President—The question as suggested is, will picking of fruit produce a crop next year?

Mr. Jonathan Perriam—It is not exactly a case in point, but the great peach grower of Michigan, R. Morrill, has peaches

with scarcely a failure by cutting back the trees severely after the peaches form. We can not cut back apple trees in that way.

Mr. Thurston—You say thinning, you mean the branches?

Mr. Perriam—Thinning the fruit, a fair pruning. Now I object to excessive pruning, but there is a certain amount of pruning so that each leaf can have its fair amount of life and yet the tree not be top-heavy. Certain varieties are bound to overbear.

Mr. Morris—Last year we had a heavy storm that blew off half the apples. I thought our fruit crop was nearly ruined, but it was the best thing that ever happened. It was the first time in many years that I failed to have a supply of Duchess after the trees all blossomed and bore. At the time they were one-third grown I shook the trees and shook almost every apple off.

Mr. Toole—Thinking over the situation and listening to the discussion, I am glad that we can get some satisfaction over the present situation. I think that we need not be so much disappointed in regard to the shortage of fruit this year because we said when we decided to show at the Pan-American that we were facing an off year and had some little doubt as to the feasibility of the undertaking on that account, because we knew there would be a shortage this year because of the heavy crop last year. Last winter in looking after scions for other varieties I found it very hard to get any scions for grafting. We all had the same experience. I think that the majority of the growth last year went into the heavy fruiting.

Mr. Edwards—I read the other day an article by a professor of Massachusetts and there is one statement he made that comes right in here, and that is that it is not the fruit that saps the tree, it is the seed; therefore if you remove half the fruit, you are removing just about that much vitality that goes into the seed production.

Mr. Herbst—It seems to me that where you thin your fruit, you are throwing that material into the other fruit, and the only difference that I can see is that you will have that material in much larger and nicer fruit. I can not see but what you are sapping the tree just as much.

Mr. Toole—With the exception of the seeds, that is where the difference comes in.

Mr. Herbst—Yes, with the exception of the seed that will go with the fruit that you are picking off.

Mr. Perriam—It is not true that the fruit in its maturing state saps the vitality; the vitality is sapped when the fruit begins to ripen; it must be; there is only the germ of the seed in the small fruit; that is apparent in the young fruit. There is nothing in it; the constituents that go to make up the ripe fruit are not there yet. In my opinion the excessive blossoming of trees does not sap the vitality of the tree to any great degree.

Mr. Herbst—Is it not a fact that every time a tree sends out a new limb or branch, there is a corresponding root sent out?

Mr. Perriam—I never heard the theory that the blossom had anything to do with the root, but the leafage of the tree has to do with the root; no leaf, no root. The root part is subservient to the leafage of the tree; in my opinion that is well established.

Mr. Hatch—With your permission I would like to say that after more than a quarter of a century's experience in practical orcharding I made up my mind emphatically that the off year was the off man, and that I was the off man I had to deal with more than anybody else. In my orchard management I never had any off year except that I was very much off in my management. Now what I did that you can do, and that will be helpful to you. I thin my fruit by pruning. Now it is evident to you that if we pick off half of the bearing branches of a tree, you have reduced the fruit surface one-half. I never have seen a tree bear fruit but what some of the limbs had lost vigor and needed to be removed; some were very givorous and needed to be checked; there is an unbalanced growth that the pruning knife is potent to remedy.

OUTLOOK FOR SMALL FRUITS AT STURGEON BAY.

Mr. A. L. Hatch—I have been too busy with the cares and burdens of a busy life to write a paper, and I will have to talk to you. Now there is no significance in small fruits at Sturgeon Bay, as far as the people of Wisconsin are concerned, unless they have the knowledge of what we are doing and have done there; you can learn something that will be helpful to you and others. As far as the definite commercial history of fruit culture is concerned, it is embraced within the last seven crops and only in a very small way as to those. Before that we had no history of commercial small fruit culture at Sturgeon Bay. Since that time we have had a demonstration of the fact that the climate and the soil seem to be extremely favorable for the production of strawberries and reasonably so for other small fruits with reasonably good care. As far as variety is concerned, I wish to include cherries also in what I have to say.

Now, as far as the season's conditions are concerned, they were as favorable to us in the fall of last year for late ripening and maturing plants as they were elsewhere in the state. We have the same general trouble with these plants that were injured through the winter, small roots, etc., that you had generally through the state. With one exception the spring weather was extremely favorable and everything that was alive seemed to start and make a pretty good growth; then we had a season of dry weather at a vital time, did not injure other crops, but it happened to be dry about a week; then we had some rains and hot weather and we had a great many soft berries, but we did not have the knotty berries that are complained of in some places and we sold a great deal of fruit on last year's reputation. But later in the season we had better fruit, and in my own case, from four acres I sold I obtained a little over, well, somewhere between eleven and twelve hundred dollars and that was about as good as any of them did there, and there were others whom I sold the fruit for,—about forty different growers,—and it kept me very busy, indeed. These berries were shipped largely to Minneapolis, some across the bay to Menom-

inee and Emerson, and of course in the handling of this quantity of fruit for a good many growers we get a good deal of experience along the line of commercial shipping of fruit, and we think we have that matter pretty well reduced to a science, if there is any science about it.

The general practice of our growers has been in cultivating to fertilize the ground pretty well after we get the crop in. Set those of which we are to have a bed ready to fruit next year; during the winter mulch it with some good fertilizer and apply ashes; but lately we have concluded that the application of ashes during the winter is rather dangerous, that is, we think that it has injured the roots a great deal, especially with careless application, and we are inclined to the opinion that we had better wait until the plants start to make a growth, rather than to apply it in the winter. Some of the growers have been applying as high as 200 bushels to the acre, and I have been applying about 40 bushels, but there seems to be a consensus of opinion that we had better change our method of application.

One thing is very strange that occurs to us that is peculiarly climatic and different from what it is elsewhere; we find that some of our best crops and best fruits are grown right in the long, old beds among grass and weeds. There seems to be such a protection from the winds that we get some glorious specimens right from the grass, and it will be specially grateful to the Doctor to know that that is the truth, and if he does not succeed in Eureka in growing berries, let him come to Sturgeon Bay and he will have an excuse for doing it, because those plants that have been protected from the wind in this way have given us the best fruits and it was remarked not only this year but previous seasons, not only by myself but by my neighbors who know what they are talking about, and that is a peculiar thing that I do not think will occur elsewhere. I hate to see a weedy bed, but if we get there and get the money that is what we are after.

Our main variety for business purposes has been the Warfield, but we have been disappointed in the Warfield this year because of its weak rooting last fall, and for the first time in its history there has been something of a failure; but we have

planted largely of the Clyde, and I think we shall run up against several good sized snags. You know we get enthusiastic over these things, and we see some splendid results and we go around and we look at beds and we feel as though we wanted some more of them next year. Now, the trouble with the Clyde is, it has got a tremendously strong stem and it sticks to the stem tenaciously; it is difficult to get it off without bruising it, and slight as that may be, it is a real commercial difficulty. The Warfield may be picked more easily; it has a different stem and different shape. That little difference there is going to be something that is going to injure the Clyde and we are not going to find it ship as well as we had hoped it would; that is my judgment; although I planted considerable of it, it did so well last year that we planted it. We have not yet tried the Senator Dunlap, but I am very hopeful of that being of the Warfield style; it will fill the place of that under new varieties. Of course there is a multitude of new varieties tried.

Now, in raspberry culture the Cuthbert and the Marlboro have both paid us excellently well. For the first time in all my experience in fruit culture the raspberries ripened up the bulk of their crop within a week. I never saw it before in my life and never saw them so soft from the extreme heat.

In blackberries we find that the great trouble there is the Septoria, or leaf blight, that injures the foliage. A few years ago I obtained some plants from Baraboo of the Badger, and we find the Badger is succeeding and paying very nicely, as distinct and different from the Ancient Briton; but I am sorry to say that the parties at Baraboo did not send me decent stock, and I have been discouraged with it, but it is a fact that the Badger has a successful growing power that make it succeed when the Ancient Briton will not. I want to say this, that believing some of the good words that have been said of the Loudon berry, and persistent praise of it, I planted considerable of the Loudon myself, and I have been thoroughly disgusted and I think it is one of the most blatant humbugs in existence, and as far as my observation is concerned, it is all wrong; it is more subject to *anthracose fomes* than any other variety. We had two rows that received better culture than the Cuthbert and

Marlboro, and there were not enough berries to pay for the picking, and I have carried that along persistently now for five years.

Currants are grown there quite considerably now; I sold several hundred cases at from 90 cents to \$1.00 a case, and the crop was not entirely satisfactory, but the Versailles has been a complete failure for want of good foliage. The variety that is now succeeding is what Mr. Kellogg has recommended, the Victoria and Prince Albert; all those have been satisfactory.

In gooseberries, the only really good thing we ever found there has been the Downing, and those sell for about 95 cents to \$1.00 a case, and ready sale for what small quantity we had. The Red Jacket is one of those kinds that you can say a good many things of and not be true, and the disappointment comes in the quality. The best for family use and canning is the Downing. Perhaps that covers the small fruit situation pretty well.

In regard to cherries, I will say that our climate there seems to be especially adapted to the growth of sour cherries. I shipped a great many hundred cases of cherries this year, and I found them to be ready sale and almost unlimited demand for them. The sales ran all the way from \$1.10 to \$1.63, with possibilities for \$1.50 and \$1.75, if we could have got together carloads to reach the Minneapolis market. I shipped out perhaps two carloads in all; I shipped 268 cases for one gentleman and paid him \$450 in cash for the 268 cases, and in view of this being our first experience in shipping in quantities, and the fact that I could not get together carloads, I thought it was very satisfactory. But near me, and induced by my example, to make a planting, are some orchards of cherries, and I begged them and coaxed them to spray, and offered them the outfit to spray with, but it is one of those extra jobs, you know, that we do under pressure, and they did not get to it. I sprayed my cherry orchard, and with such success that I think it is evident to anybody who sees the two that it will not pay to attempt to grow them without it. The trouble is, the fungus and perhaps some cherry mould, will drop the foliage, and there were trees in my orchard, large, nice trees, full of foliage of just as bright

green as could be that were sprayed, when in my neighbor's orchard a quarter of a mile away, trees that were expected to bear half a bushel, the first of the month did not have a handful of leaves left.

I want to say this about spraying: I consider without spraying we might as well give up all along the line; either spray or surrender. In regard to that, I found one of the most efficient sprays for the cherry and the plum to protect against fungous diseases is winter spraying; that is, spray any time when the foliage is off the trees, before the growth begins. I got this hint from attending the horticultural meeting at Grand Rapids last winter in Michigan and getting in touch with Mr. Morrill at Benton Harbor. There are three great big round reasons why it is the most important and the best of all sprays. First, the material used is the cheapest; you simply use an ordinary spraying tank, 50-gallon kerosene barrels, the cheapest vessel you can get for that purpose, so all our spraying solutions have reference to the 50-gallon quantity. Use a solution of four pounds of blue vitriol to 50 gallons of water; that is the formula, and that is all there is of it; that is the cheapest spray you can make. Then spray twice, for this reason: no matter how still a day may be one side of the tree you can cover nicely, because the wind will help you spray with the wind, so that the wind will cover the tree fully and completely with that solution during the time there is no foliage on the tree, and it will do more good and it is cheaper than any other spray. Then you know spraying is not remedial; it is preventive and you get there first. Rust spores and the spores that are lodged on the trees around the buds will be reached by this spray at this time. You can do it far more cheaply because you do not have any foliage to cover and it will get into the trees. Then you can do it at the time of year when you have ample time to do it; you are not in a hurry and rush of the summer work, and for these several reasons I would say, by all means do this and do not neglect it, and I am now satisfied that, with the fungous diseases prevailing everywhere, that spraying is the *sine qua non*, that without which the thing cannot be done.

REPORT OF SMALL FRUITS AT SPARTA FOR 1901.

Wm. Hanchett.

The crop of small fruits for the season of 1901, taken as a whole, was considerably below the average. The droughty condition during the fore part of the previous season prevented the early rooting of runners in the new plantings of strawberries, and as this was followed by an unusual amount of moisture during the latter part of the season, the strawberry fields became thickly matted with plants which were insufficiently rooted when winter set in. As a result spring found roots badly damaged, especially in fields where insufficient winter protection was given.

It became apparent early in the season that the plants were not making a vigorous growth; blossoms were small and fruit stems slender and when the fruit began to ripen it was found to be far inferior in quality to the high standard attained during previous years at Sparta.

The red raspberry crop was rather better than ordinary, where winter protection was given, but a total failure where no protection was given. The excessive heat, however, cut off considerable of the crop.

The blackberry crop was very light, owing to the excessive heat and drouth. All the fruit exposed to the sun's rays was cooked before ripening, the only fruit maturing being that which was shaded by foliage.

Prices were good throughout the season, growers being able to dispose of the fruit for cash when delivered at the depot. The bulk of the crop was marketed under the auspices of the Fruit Growers' Association, the association sending out during the season 74 carloads, amounting to some 30,000 cases. The two express companies doing business at Sparta handled a portion of the crop, but as I was unable to get the amount so handled I can only approximately estimate the total crop at 40,000 cases, for which the growers received something like \$40,000.00 above expense of boxes and marketing.

The varieties most popular among growers are, of strawberries, Warfield fertilized with Enhance; Gandy is also becoming very popular among a few growers who give extra fertilization and tillage, but unless these are given it is only a disappointment.

Of red raspberries, Marlboro and Cuthbert are the standard. Loudon is being discarded by most market growers.

Of blackberries, Briton still leads, but the marked tendency which it has shown for a number of seasons, to drop its leaves and dry up when the fruit is about half grown is causing considerable anxiety. The Thayer fruit farm reports Snyder as having produced by far the most satisfactory crop this season, while on the Badger State farm an experimental plot of Eldorado has proven so satisfactory for the past two years that we think it will supersede the Briton.

The new settings of strawberries are sadly in need of moisture to hasten the rooting of the newly formed plants and unless timely rains come next year's crop will be considerably shortened.

The small fruit industry is doubtless permanently established at Sparta as one of the leading industries. Growers are inclined to take seasons of reverses patiently and put their faith in the bonanza year which is to come. The tendency is toward an increased acreage next year.

DISCUSSION.

Mr. Hanchett—I want to indorse all that Brother Hatch said in regard to the Loudon. At our place it has been a great disappointment.

Mr. Hatch—I want to say to Mr. Hanchett in regard to the Snyders, that I noted the Snyder blackberries are more immune from fungous diseases than any other.

Secretary Herbst—This acre of Snyders that Mr. Hanchett has spoken of in his paper is an acre that is fourteen years old, to my knowledge. This year we picked off that acre 150 cases of berries and there was not a case of them sold for less than

\$1.65. We picked the same amount, 150 cases, from three acres of Ancient Britons, but this acre of Snyders has been the least affected by diseases of any that we have got there.

Mr. Toole—I noticed in your speaking of winter spraying you dispensed with the lime as unnecessary with the vitriol, but I suppose the spraying done from the time the buds commence to open and from that time on, you will in all cases use the lime with it.

Mr. Hatch—Oh, certainly. You see, the efficient fungicide is copper-sulphate and the reason why we use lime with it in spraying foliages is because the copper-sulphate injures the foliage; if it did not injure the foliage it would not be necessary to use lime. In the winter spraying, it not being necessary to protect the foliage, we make our spraying cheaper by not using it.

Mr. Perriam—You also spray in the summer?

Mr. Hatch—This form of spraying is so cheap for various reasons that we ought to do that, whether we do the other or not. The other is equally desirable and should be done in its time, but it should be done with the regular Bordeaux mixture and with insecticides if necessary. The Bordeaux is simply a fungicide and if you have insects you have got to add insecticide to it.

Mr. Herbst—Is there any one here who is growing the Badger who can give a good description of the variety and the fruit?

Mr. Hatch—That seems to have fallen rather flat. With all the claims that have been made for it, the Badger does not seem to have taken hold; I cannot say why, there is something wrong about it somewhere. I know that the Badger and Snyder are the best berries I have had.

Mr. Edwards—I would like to ask Mr. Hatch if he thinks it will be quite fair to make a wholesale criticism of the Loudon because it does not do well on his soil? Now I know of a great many soils where it has done excellently well and given good crops and a long season of a berry that very closely resembles the Cuthberts.

Mr. Hanchett—How many seasons in succession did it bear?

Mr. Edwards—In this section I refer to, it did not bear this

year because it was too dry. We simply lost a crop of every kind with us.

Mr. Hanchett—Have you known it to bear more than one good crop?

Mr. Edwards—Yes.

Mr. Hanchett—That is the trouble we find with it in Sparta. It will bear a fine crop the first crop, and the next year it seems to be wholly used up with fungous diseases.

Mr. Edwards—The same charge is made against the Cuthbert; it bears nicely the first crop and then quits. Now we meet here and one man will jump up and say the Marlboro is good for nothing, and the other one will say it is the best thing we have got. I think it is a matter of soil and location.

Mr. Hatch—Now it is true that any variety is worth just what you can do with it, and it is worth no more than any other variety unless it can exceed that other variety. Now suppose you have succeeded with the Loudon, you have nursed it through. Well, you may have had a special culture of soil,—circumstances that fit it all right. But suppose, at the same time, you have taken the Cuthbert or any other good variety and given it the same care and it has succeeded admirably well with you, now the Loudon can only claim what it has exceeded the other.

Secretary Herbst—There is one thing that we ought to take in consideration when we are praising up one of these varieties and condemning another. Now, a great many of us have been growing the Marlboro and the Cuthbert. We have had these out probably five or six years, and we set out some Loudons after these Marlboros had been in five or six years; well, they are going backward every year, while your Loudon, being a younger cane, has come in better. Now you will get up, some of you, and will say that your Loudon is doing better than other varieties. It is simply because it is a younger cane. After six or seven years that is going back just the same. Another man will come up and say his Loudons are doing very well; they are probably young canes that he has not had as long as his Marlboro and Cuthberts. You must take into consideration the age of that cane.

Mrs. Treleven—I suppose that some of you are aware that our society are conducting an experiment station at Omro. At the time that Mr. Fiske was alive it was quite a hobby with him and at my home was one of the places where we were having some of these fruits on trial and there were some Loudons sent for us to set, and we set those and they were all failures, and we had four or five other varieties to experiment with at the same time and they were all set at the same time and I think that if there was any extra work given to any of them it was to these Loudons, because Mr. Fiske was very much excited over those and thought they were going to be a great success, and they were certainly the poorest of the red raspberries that we had.

Mr. A. N. Seymour—I have had the Marlboro several years right alongside the Loudon, ever since I got the Loudon from Mr. Forrest of Baraboo, and it has not begun to yield what the Loudon has, not one quarter. It has had about equally as good care.

Mr. Perriam—This question of doing well is one which has come up every year that I have been in horticultural societies in Illinois, but I came to the conclusion years ago that the value of any fruit, I do not care what the variety, whether tree or bush or vegetable, the value of the fruit is sometimes most vitally affected, first by environment, second by the locality and third, by the care.

LAWN DECORATION.

F. C. Edwards, Vice President Wisconsin State Horticultural Society.

There is no country in the world that has so many well-to-do people as the United States, nor so many that have and own comfortable homes; and the best place there is on earth is a pretty and comfortable home. We cannot make it too beautiful or too convenient. The labor of opening up a new country has as yet given little opportunity to study lawn decoration or home

landscape gardening; but the time is ripe to give this very decided attention, and the home builders are waking up to the necessity of knowing more about this subject.

In the first place we must have a lawn to decorate. I am sorry to say that a large percentage of our people in the cities and towns have their houses six to fifteen feet from the street walk or avenue, and this being the case we have no lawn to decorate in a satisfactory manner. This fault is largely due to the fact that one neighbor crowds to the walk and the next builder, in order to not be shut in, does likewise, till all the builders on the street have followed the example of the first offender. No greater mistake is made than to have no lawn to decorate or enjoy, as much time is spent in summer on our lawns, with great satisfaction and comfort. No dwelling house should be closer than 40 to 60 feet from the street walk in front, and this would guarantee opportunity to grow or have shade and ornamental trees in the frontage and on the side and backgrounds. There is space enough in this world to have all lots not less than four rods wide and eight rods deep, and if possible these dimensions should be doubled. This question of room is crowding the best builders into the suburbs, on the lake fronts and into the country. The farmer has by far the best chance to have and own a beautiful lawn and drives. The real estate men are so greedy that they are cutting down the size of the four by eight-rod lots and the people are foolish enough to buy them and you may rest assured the real estate men will work this game as long as these goods will sell.

Having outlined a lawn we will say its surface should form a perfect slant from the dwelling house to the walks or drives. Weeds of every sort should be removed by cutting them with a sharp blade under the surface of the soil; this followed up will in a short time thoroughly eliminate this imperfection. I think we should prize very highly our natural grasses. When they are well watered and groomed they are the foundation to the best effect in lawn decoration. As the season closes a heavy coat of yard fertilizer should be applied to enrich the soil for the grasses and all tree and plant life thereon, this to be removed in the early spring.

In the planting of trees and shrubs on this lawn two aspects confront us, the view from the house and the view from the street or avenue. The view from the house should not be obstructed from the most pleasant views of landscape and scenery; but it is good taste to so plant the shade and ornamental trees as to cut off the unpleasant or unattractive views if there are any.

The appearance from the street must have due consideration as we want to have people pleased with our homes; this is perfectly natural and worthy the effort. The shade and ornamental trees on the lawn should not be placed in line, but arranged promiscuously, and the lighter green foliage trees should be nearer the frontage and the trees with darker foliage more in the background. We get the best effect from the street this way and we have the dense foliage to use near the buildings, for cooling effect and shade.

I would mention as among the best for avenue trees, outside the walk, American white elm, Norway maple, linden, white ash, Carolina poplar, box elder and the silver maple. But the first three named, in my opinion, are the most desirable. Do not plant too close, for by too close planting you destroy the beauty of any tree, plant or vine. Four trees planted on a four-rod frontage are all right for the first ten years, but after that time two trees are enough if you want to develop them into grand specimens.

The trees I would mention as the most desirable for the lawn, to select from, are cut-leaf white birch, Swedler's Norway maple, Norway maple, hard maple, horse chestnut, Weir's cut-leaf white maple, mountain ash, Tea's weeping mulberry, camperdown elm and catalpa, and on the side and backgrounds Norway spruce and Colorado blue spruce, white pine, American white elm and Wisconsin willow. Of course I could go on indefinitely, but have mentioned only some of the most desirable varieties. In the arrangement of the selection good judgment should be used in placing the trees, so that some of the trees will stand in contrast of foliage. We must study foliage effects to a certain extent the same as we do in shrubs and foliage-plant beds. We must not crowd the planting of our trees on the lawn, unless we

put in emergency trees with the intention of removing them in five or ten years, as occasion demands.

The planting of shrubs, if done with good taste, is a great addition to the appearance of the lawn. They should not be set promiscuously, as this has destroyed the beauty of many a lawn; but they should be planted on the waste places, side grounds, points and angles, but always in groups, and the question of foliage should be a prominent feature (but not too showy). For example, spirea Van Houttei (green), barberry, golden elder, golden syringa or cornus elegantissima, for autumnal effect, and hydrangea (light green). Many other shrubs I might mention, but the selection of these and other green foliage sorts in good assortment counts not less than 50 per cent. on shrub planting. The size and number of the shrub beds should be in proportion to the size of the lawn. Strive not to overdo or underdo any of your planting. There is great satisfaction in shrub planting when done judiciously, as there is very little care to be given and the results are of summer duration, and some red-branched sorts give winter effect.

Every lawn has a divide from the adjoining one by fence, evergreen or shrub hedge. If a fence, vines can be used with good effect as a partial cover, such as honeysuckles, trumpet vines, bitter sweet and some sorts of ivy. I very much prefer a shrub hedge, and if you want a low border, spirea Thunbergii is excellent. If a higher hedge spirea Van Houttei or barberry. Vines can be made a great attraction on the porches, pillars or corners. Among the favorites are clematis Jackmanii, clematis Henrii and clematis paniculata. They are easy to care for in the winter, and the bloom is superb. Climbing roses have a host of friends. Herbaceous perennials can be made of great value if there is room to use them on borders and in beds. The same can be said of roses in beds, but use in the composition of soil at least one-half clay, one-fourth fertilizer and one-fourth sand and then plenty of water and liquid manures; cut them all back to at least twelve inches in the fall, and they are easy to cover and results are better in bloom.

There is one thing I deplore, and this is the bare effect on the streets in many sections, and no room to decorate. I wish a

revolution could be made in the spaces allowed to the home builder. The farmer and the suburban resident are the ones that will possess the attractive homes of the future. Distance does not count when the rural deliveries, the electric cars and telephones go to the farmer's door. The tendency of the well-to-do is all toward the country where nature is in her bloom and the trees, flowers, shrubs and vines nod in the breezes, and the approaching drives wind their way to the spot above all other called home, with its nicely arranged lawn, shade trees, shrubs, roses, clematis and its pure air to breathe.

About the future of landscape gardening as applied to the home I am hopeful. Eastern colleges are taking up this study and western colleges will soon follow. Its rudiments, at least, will be taught in the little red schoolhouse. Time will ripen better ideas by the aid of able writers and educators and the millions of homes yet to be built will be brighter and better.

DISCUSSION.

Mr. Edwards—All the varieties that I name have proven hardy with us with the exception of the Cemperdown elm in the winter that killed so many forest trees. Of course we lost trees that winter that we considered perfectly hardy.

Mr. Irving Smith—Is the catalpa hardy?

Mr. Edwards—The catalpa with us stood that winter in our section of the state beter on an average than many of the trees that we considered hardy. I know that many of the catalpas in our country that split open that winter that have seamed together again. Now, why I spoke of the catalpa is, that it gives the lawn a tropical effect in leaves.

Mr. Smith—The trees up our way all died.

Mr. Hatch—There are different kinds of catalpa.

Mr. Edwards—The catalpa spinosa is the one that we raise, and I find the only period—and this applies to other shade trees, too,—their tender period is when they are between five to eight feet in height, they grow so rapidly in the summer that the wood does not sufficiently harden to withstand the winter.

Mr. Smith—Is the clematis hardy?

Mr. Edwards—We consider the clematis hardy. There is this about the clematis that many people do not understand. There will appear a fungous disease on them when they are imported which will operate this way. They will start a growth and run up three or four or five feet and then they will die in a day; the leaves turn black. If you dig down to the root you will find a warty substance growing down at the root. If you do not happen to get that disease on your plant it is one of the most successful climbers we have.

Mr. Hirschinger—You do not say that the clematis is hardy as to the top?

Mr. Edwards—It is an annual; as far as the top is concerned it is an annual; it dies to the ground; there is no object in saving the top of any of the clematis family. And that makes it easy to cover, because you have got to cover the root.

Mr. Toole—The clematis I have found subject to disease, whether young or old. I have obtained them from Illinois and other states and from local dealers and they are likely to grow at any time, just as though you had thrown water on them, so that people ought to know about that. As regards winter hardiness they are all right, but people ought to be prepared for the disappointment that may follow. There are some grand specimens in Baraboo, but numerous failures.

Mr. Edwards—There was one thing brought out in our Horticulturist in a paper by Mr. Stickney. He spoke of the Norway maple. Now he has some specimens to demonstrate his statement. I think we have no maple today that ranks with it. It has such a pretty foliage and holds its leaf very long.

The President—You spoke of the *Cornus Elegantissima*, now do you grow that on your lawn?

Mr. Edwards—Yes, we do in our shrub beds; we do this to get the autumnal effect. Now, as I came to the capital today I found the foliage beds very pretty, because the variety is there in the shrubs. We get so much more beauty; we do not want to overdo it any more than some people want to overdo in dress, but if we will get a moderate amount of the autumnal look in our shrub beds, not get too much, we can either use

Cornus Elegantissimo, Golden Syringa or something of that effect there, not too much, and we get an effect that is of a season's duration.

The President—That is the leaf.

Mr. Edwards—That is the leaf. It is not the flower of the shrub so much, or any more, I put it at 50 per cent. the foliage of shrub planting figures at least 50 per cent. of the beauty.

Mr. Hatch—At the Trans-Mississippi Exposition they had for foliage and beautifying effects what is called the Russian Tamarisk, and I think that when we come to the University tomorrow we will find some of the Russian Tamarisks growing there.

Mr. Edwards—The eastern tamarisk with us is not hardy.

Mr. Hatch—I notice there is quite a tendency or fashion in the matter of tree planting to turn to the Carolina poplar. I never came in contact with it or planted it myself, but I notice it is receiving a great deal more attention than heretofore. I believe the poplar family has been neglected somewhat.

Mr. Edwards—In regard to the Carolina poplar, we have been growing it for several years and I never saw a tree that will develop as fast as that will and still not split off the limbs. We have a charge against the box elder and soft maple on account of the splitting off of the limbs.

Prof. E. S. Goff—In regard to the Russian tamarisk hemlock, we have been growing it at the Experimental Station for several years. We cannot call it hardy, that is, the stem freezes down every hard winter and during that cold year of '99 it froze clear down to the ground, all of the stems, but the roots started up vigorously. The roots do not seem to suffer from the winter, but the stems do, but it recovers so quickly that I do not regard that as any serious fault. It is very delicate in foliage and the flowers are attractive.

Mr. Smith—Can you suggest something that could be placed in front of the Golden Glow to relieve it of that long-legged appearance? It is three or four feet at the bottom without any leaves.

Mr. Edwards—Well, the Golden Glow has long legs, that is the effect of it in some places. It ought to be used in the back-

ground or on borders, but as to using it in beds, I know of nothing that will grow in height with the Golden Glow.

Mr. Smith—Have you not some shrubs that will grow half the height of the Golden Glow, that would have the Golden Glow as center? I do not know of an herbaceous annual that will do it.

Mr. Edwards—There is one matter I did not have the time to treat on, and that was the trimming of shrub beds. Now the trimming of shrub beds ought to consist in taking out the old stems and reproducing them the same as they were. Of course you will understand how that is done, instead of cutting off the tops, a shrub bed always wants to be kept in the form of a shrub and never in the form of a tree.

Recess until 1:30 P. M.

The President—We will take up the 9th order of business for the morning, reports of delegates from local societies.

REPORT FROM WAUPACA.

Mrs. Barnes—I am not really a delegate, but the real delegate could not come. We have a very good society. I cannot say that it is booming, but we held two meetings last winter and it was on account of sickness that we had no more. The last meeting I think was in March. We held it in a hall in the country and there were over three hundred present, not all horticulturists, but we gained quite a good number of names that evening, and we had two fine papers from two farmer boys, —young boys they were, and we felt really proud of them, but we have not had a meeting since then, sorry to say. I do not know of anything else that will interest you.

REPORT FROM APPLETON.

Mr. Abbott—We have four meetings a year—one meeting every three months. Ever since I have been a member of the society we have not failed to hold those meetings, except last April, when a number of our members were sick, but we have our meetings regularly and generally have a very good attendance. We think that we have got the society of the state. There may be other societies that are good, perhaps, but we think more of the Grand Chute Horticultural Society than we do of any other.

There is one thing that we have missed of late years; perhaps it is the fault of our secretary. When Mr. Hoxie was secretary of the State Horticultural Society, he used to attend some of our meetings, but Mr. Philips attended the meetings very seldom. We would very much like to see our state officers at our local meetings.

The Secretary—Things have been changed since that time. You have got to write in now to the president and have him send somebody there.

Mr. Morriss—I represent as a delegate the Algoma Society. The Society is in a comfortable, flourishing condition. We hold meetings once a month. Every three months we have a little extra, have an entertainment and social good time. Our membership is in the neighborhood of seventy or seventy-five members. Our president is Mr. Sperback, and our secretary is Mr. Christenson. The state meeting being held at Oshkosh last winter increased the number of our members considerably, and at that meeting we joined together to try to have as good a meeting as we could with the state meeting and offered quite a premium on fruits and such like, and through means of that kind quite a number were encouraged to come in that did not formerly come in, and I think our Society is in as good, healthy condition, as far as interest and attendance goes, as we could desire.

AWARDS.

Madison, Wis., Aug. 27, 1901.

Mr. President and Members of the Wisconsin State Horticultural Society:

Your committee on awards beg leave to report awards as follows:

- Best plate De Soto plums—1st, J. L. Herbst; 2d, Wm. Toole.
- Best plate Wyant plums—1st, A. D. Barnes; 2d, Wm. Toole.
- Best plate Forest Garden plums—1st, W. H. Drake.
- Best plate Cheney plums—1st, Wm. Toole.
- Best plate Weaver plums—1st, R. H. Heatherton.
- Best plate Lombard plums—1st, C. H. Hirschinger.
- Best plate Green Gage—1st, R. H. Heatherton.
- Best plate Damson plums—1st, Wm. Toole.
- Best plate Burbank plums—1st, W. H. Drake.
- Best plate Abundance plums—1st, Wm. Toole.
- Best plate Show Seedling plums—1st, Wm. Toole; 2d, A. D. Barnes.

Committee also recommend a special premium of \$1.00 be awarded E. T. Sheldon of Omro on exhibit of seedling European plums, which were of especially fine quality.

- Best plate Yellow Transparent apples—1st, A. D. Barnes.
- Best plate Duchess apples—1st, A. D. Barnes.
- Best plate Lubsk Queen apples—1st, A. D. Barnes.
- Best can of plums—1st, C. H. Wannamaker.
- Best can of cherries—1st, C. H. Wannamaker.

Respectfully submitted,

W. H. HANCHETT,
B. H. SMITH,
F. C. EDWARDS,
Committee.

REPORT OF COMMITTEE ON FLOWERS.

The five entries of cut flowers for premiums were of high quality both in varieties and excellence of growth. The committee respectfully submit the following awards:

No. 1. Display of gladiolas—first premiums, H. C. Christianson; second premium to No. 6, Wm. Toole, Baraboo.

No. 3. Display of cut flowers—first premium, Mrs. Barnes, Waupaca; display of phlox—first premium, Mrs. A. D. Barnes, Waupaca.

No. 2. Display of cut flowers—second premium, M. J. Morris, Oshkosh.

Mrs. JOS. D. TREELEVAN, Chairman.

JONATHAN PERRIAM, *Reporter*.

On motion the report was adopted.

PLANTING AND CARE OF PLUMS FOR WISCONSIN ORCHARD.

By A. D. Barnes of Waupaca.

The first requisite for a good plum orchard is a good site whereon to plant your trees. Second, selection of adapted, hardy, good varieties. Third, planting and care of them.

Plums love a moist and secluded spot, must have natural good lands, or plenty of artificial fertility. Hence one must select a site somewhat out of the wind and drafts, as wind and dust storms are so damaging and destructive to the pollen when in bloom, and to the fruit when ripe; or else plant artificial wind brakes at the time of planting the plum orchard. Plums will grow to a success on any fair soil, whether it be sandy, loam or clay, providing they have deep, loose root beds, sufficient moisture and fertility. Hence the necessity of digging wide and deep holes for the trees, careful planting in loose lively soils with plenty of water to start your trees, which should be set at least four to six inches deeper than they grow in the nursery.

To prevent root sprouting or suckers from growing, should be mulched and carefully cultivated for about three years, then mulched only, and in the early spring, to conserve and retain moisture. Plums do best with congenial neighbors. As some are pistillate varieties they will not fertilize themselves, hence *must* have partners of the other sex or staminate varieties in close communion with them. I would plant for a Wisconsin orchard the following varieties in the order named in the quincunx form (as diagram herewith attached): 12x12 or 14x14 ft., according to quality of soils when planted. I would leave out every fifth row to make a drive-way for hauling, mulching and other purposes. I prize and plant them as follows: Surprise, Wyout, Forest Garden and De Soto; all American varieties. Yet there are many other profitable and hardy varieties; would prefer two year old June and July buds on native stalks; would not like to plant larger trees, and never plant plums on peach stalks. The plum orchard should be surrounded with a high hen tight fence, and be maintained as a hen park or pasture where multitudes of young chickens are raised, who together with the old fowls, will catch and devour all larvae, curculia and pests, if jarred off the trees in the morning, and will eat much of the affected fruit, if any, serve as cultivators and keep the mulching stirred up, grounds clean and add fertility to the soil. Deep cultivation and breaking of roots should never be allowed. Careful and judicious pruning is very essential, spraying beneficial, but not always necessary, if farmed by hens. Practical experience has demonstrated that plums will and have yielded seventy-five per cent. more fruit when grown in the hennery than the same number of trees in the same orchard outside of the hen park. Never plant less than a dozen trees, and far better plant a hundred. Plums are healthy and popular fruits.



Lombard Plum. Wisconsin Trial Orchard, Wausau, Wis.



Seven-year-old Patten's Greening. Wisconsin Trial Orchard, Wausau, Wis.

PRUNING OF PLUM TREES.

By William Toole.

Taking for granted that your trees are bought from the nursery, pruning should be commenced at the time of planting in the orchard, carefully trimming the bruised or broken ends of roots with a sharp knife. Carry out with the top the same idea you would when planting shade trees,—cut back somewhere near in proportion to the loss of roots, and you will have a much stronger immediate growth than you will if no pruning is done.

If your young tree is a long switch it is easy to plan for the future form of your tree. Cut back as low as you dare have the branches spread from the trunk. It is not desirable to have the branches up so high that a horse may pass under. Better if the branches keep the horse so far away that the whiffletrees can not touch the body, but you will want to get under the tree yourself to pick up fruit, yet some varieties will scarcely permit this if allowed to grow their own way when young.

You may some times buy young trees which have not been properly trained in the nursery, thus making it necessary to cut well back to force the growth of a new body rather than to have a sprawling thing which will compel the removal of large branches at some future time.

If your trees thrive well the branches will be long switches which should be cut back to one-third of their length, otherwise some will throw out branches near the ends, and the most thrifty ones will incline to take on the form of trees themselves. The more luxuriant the growth of the switch the more positive should be the pruning. This cutting back should be repeated so long as the tendency to make long extensions of growth is continued, but after fruiting commences, attention will have to be given mostly to keeping the inside sufficiently open and preventing interlocking or crossing of small branches.

Forethought in pruning will make the trees more compact and strong, thus lessening the tendency to break down when

loaded with fruit. A good time to prune is late in winter during the pleasant days when you feel as if you just wanted to do some horticultural work that makes it seem as if spring is coming.

Other good times to prune are when the weather is not too hot or too cold. It would be well to keep your knife in your pocket when the wood is frozen and not plan for any pruning during the dog days, but even then you may help nature along if you have overlooked here or there a small branch which shows that the tree will soon have no use for it. These dead twigs and small branches which may be found scattered through a healthy tree are very annoying with their thorny spines, at fruit picking time, and always unsightly, besides promoting decay into the branches. A knife blade with a straight edge is better for pruning than the orthodox form of a hooked blade. With a slight pressure with the left hand on the branch to be removed, and a drawing cut with the right hand, you can with the straight sharp edge remove a much larger branch than should be found necessary to take off.

The knife sent out by an American firm, which they name the Chas. Downing knife, is a good one to keep sharp in the pocket, to be used when needed. I have had no occasion to use saws or any of the pole trimmers on my trees, so can say nothing about the best form of that class of pruners.

One style of pruning seems to be of doubtful necessity, that is, pruning for stubs to strike on when jarring off the curculios and gouger. When cutting for scions judgment should be used in regard to the future shaping of the young tree, and it would be well to do it yourself rather than to defer to the opinion of the man who wants the scions. After the trees have commenced to bear you may have difficulty in getting scions from such free fruiting varieties as the Arctic, Townsend, De Soto, Rollingstone, etc.

Experiments in cutting back parts of trees this year on the Arctic and Baraboo, prove that we can this way promote young growth, and reasoning from this, I think we can to some extent thus rejuvenate our old trees of such over-bearing varieties as the De Soto, which after a few years' bearing show lack of vigor

and tendency to die out. There is another kind of pruning which is of marked benefit, not only in promoting the vigor and in prolonging the life of the tree, but also in improving the quality and size of the fruit. I refer to fruit pruning as thinning, but by all means let it be done by removing the fruit and not the fruit spurs.

The curculio and gouger will try to do the thinning for you, but they make such a mess of it their work should be prevented as much as possible. Sometimes the injury from aphids is in such shape that it is well to trim off and burn the infected branches. Black knot and blights should be treated with the knife and fire but I have not been troubled with these diseases, so can say but little about them. In conclusion would say, keep you knife sharp.

DISCUSSION.

Mr. Edwards—I would ask if Mr. Toole would rather a plum tree should be on its own roots?

Mr. Toole—No, I will say not all, I might perhaps, but circumstances alter cases. The reason that I say, No, is because I am making rather a hobby of plums and I was kept back several years in following my friend Harrison of Minnesota in order to get good roots. In the meantime, if I had thrown that aside I would have been several years ahead, because it is slow work getting trees on their own roots.

Prof. Goff—It makes a great deal of difference what species of plums we are dealing with as to how they need to be pruned. The Japanese plums do not grow out very long, with very long slender branches, and they need but little pruning, except to cut back the branches and keep them from growing out too long, so that they break down. The same is true to a less degree of the domestic plums, the American plums grow more like the apple tree, they generally grow thick, and old trees sometimes get so thick that it is impossible to get at them unless we thin out the smaller branches a great deal. I think, too, we need to cut back the shoots of our plum trees more than we do to prevent

their growing so slender. We have a great deal of trouble with twigs breaking down, and I think that if we cut back the shoots more during the growing season, we might remedy that to a considerable extent.

Mr. Smith—In the paper Mr. Barnes said that most any kind of soil would do, sand, clay, or heavy black soil, and then a little later spoke about a loose soil. Clay is not ordinarily very loose. Now I would like to know if plums will do well in a white clay, mixed more or less with sand and gravel.

Prof. Goff—I have seen plums growing on heavy clay soil and they do very well, indeed. That is in Geneva, N. Y. There are a great many plum orchards and the soil is an exceedingly heavy clay; it is well drained. I have also seen plums doing well on a light sand. Mr. Lord's place, Minnesota City, is on a regular moulding sand, and some varieties of plums do very well with him. I think it is probably true that some varieties do not do equally well on both kinds of soil, but it is certainly true that plums will do well on both heavy and light soil; the heavy soil, however, should be well drained.

Mr. Edwards—You say on Japanese sorts you cut them back as a rule. Now what percentage would you cut back?

Prof. Goff—Of course that would depend on the growth. I do not know that we can give any numerical rule, but if we did not cut them back, they tend to grow out long slender arms that by and by will break down when they get a load of fruit on. They are like peaches in that respect.

Mr. Edwards—I wish you would give the explanation here that you gave me some time ago.

Prof. Goff—It was during the growing season that Mr. Edwards was out there and I told him that I made it a principle not to cut back the young shoot during the growing season. The theory is that a shoot for the first two weeks of its growth takes its nourishment largely from the branch that it grows from. If you take it off, then the barren branch is weaker than if the shoot had not grown, and consequently we have reduced the vigor. On the contrary, if we leave it until the time for the natural cessation of growth, it has restored what it borrowed from the branch and something more besides. That is why I

say I do not like to cut off vigorous, succulent shoots during the summer. I think I should rub them off just as they are starting, but if we have neglected that, then I leave them till the end of the season.

A Member—How long does the plum season usually last?

Prof. Goff—In ordinary seasons we have a few plums the first week in August; this year we did not, and last year we had plums until election time, into November we had plums on the trees and we sold some plums until the very last week in October and we had some that we might have sold, but we concluded it was not worth while to take them down, even after the first of November.

A Member—How long does it take a plum tree to come into reasonably good bearing?

Prof. Goff—About four years from the grafting.

The Member—That would be about two years from the time when you get the trees, if you have the trees from the nursery.

Prof. Goff—I mean about four years from the time you plant it in the orchard. A plum tree should improve for eight or nine years and possibly longer, but will bear pretty well at four years from the nursery tree.

A Member—When would you do the pruning back of the young shoot?

Prof. Goff—I should do that after the growing season.

Mr. Toole—During the fall or spring?

Prof. Goff—Generally in the spring. I prefer to do it in the spring.

Mr. Toole—That is early spring, I suppose?

Prof. Goff—Yes.

Mr. Seymour—Our plum trees were severely pruned early in the spring and a good many large limbs cut out that were several years old. I covered those wounds with grafting wax. This year we have but few plums, but there is a very large growth from the ends of the limbs, from the shoots, and now would it be right for next year's fruiting to cut off about two-thirds or one-half of those shoots in length?

Prof. Goff—I should hardly want to cut them two-thirds; I think one-third would generally be enough.

Mr. Seymour—You think that would be better than to leave them on?

Prof. Goff—Why, yes, I think it would. That is practically the rule with the peach tree. The plum tree grows more like the peach than any other tree, unless it is the apricot.

Mr. Smith—How long can we reasonably expect a plum tree to live?

Prof. Goff—I do not know as I can answer that question. Mr. Lord has some trees in his orchard that are some 30 years old and I have known an Americana plum tree to bear that had been planted 40 years.

Mr. Toole—In connection with the idea of cutting back on old trees I could not nerve myself to trim my Spauldings and Johnsons as I should have done. The crop on each of them this year is very heavy; I fear that they will be weakened for any chances of carrying fruit next summer, and I intend to cut them back as heavily as I can without cutting the large branches, I mean to trim them pretty well all over, I believe that that will help them for the future.

Prof. Goff—As a rule I think it is bad to cut back any tree very severely at one time. The effect of it generally is to start a succulent growth that does not fruit, at least not for one year, and often it is two or three years before a tree gets back to fruiting well that has been severely cut back. It is much better, I think, to cut back every year, keep a moderate growth, but avoid stimulating a very vigorous growth.

Mr. Edwards—Am I quoting Prof. Bailey right when I quote him as saying that the tendency was, if you trim trees in the fall it produces fruit and if you trim in the spring, it produces growth?

Prof. Goff—I think he said to prune in the winter for growth and in the summer for fruit; that is the old rule.

Mr. Edwards—Do you find that corresponds with your experience?

Prof. Goff—That is the tendency, yes, during the growing season especially; if you nip the branches it tends to make fruit buds; that is a well known principle which has been known for a great many years in practice. It is also true that if we prune during the dormant season it tends to stimulate growth.

Mr. Edwards—Nipping off the end of the bud is different from pruning.

Prof. Goff—Our definition of pruning is to remove a part of the plant to make the other part grow as we want it to grow.

Mr. Edwards—In common practice pruning would be cutting away a whole limb, in simply pinching back the branches, that is applied for a different purpose.

Prof. Goff—Whether we pinch or prune, it still tends to reduce the vigor, for the reason I gave a moment ago, and that which reduces vigor as a rule tends to produce fruitfulness; although if the plant is not vigorous to begin with, it will be different.

Mr. Hatch—Would not the idea be if you remove a whole branch of leaves, then you reduce the vigor and injure the tree, that would be the idea you wish to express?

Prof. Goff—Yes.

Mr. Hatch—Now if we have a branch growing, and it seems to have no tendency to mature, if we pinch the end of it just so as to check the end extension and cause it to form no more leaves, then it would mature and ripen, and so that pinching off is used largely for the purpose of maturing and ripening, and checking this abnormal growth.

Prof. Goff—Yes.

Mr. Hatch—And that would tend to fruitfulness?

Prof. Goff—Yes, if it is done early enough.

Mr. Hatch—Whereas, removing an entire limb and a great deal of foliage, would in your judgment be robbery of the tree?

Prof. Goff—Yes, especially early in the growing season.

President Loope—Prof. Goff, I want to put out 100 plum trees on a plat of land; what kind am I going to set out?

Prof. Goff—I suppose you mean what kind I would set out, perhaps?

President Loope—Yes, I want your judgment.

Mr. Hatch—Suppose with all the trees and all the kinds that you know of, what would you set the 100 of?

Prof. Goff—Just as I remarked to Mr. Hatch yesterday,—our select list this year is not the same as it was last year, and I presume next year it will not be the same as this year. This

variety question is a perennial question. I have never known any fruit grower to satisfy himself as to his varieties, but we have to use our best judgment based on our experience and our knowledge. I should want a little time to think about it before I bought my trees, but at the present time I might make a provisional list, subject to future revision. Your purpose is for the market?

President Loope—Yes, it would naturally be for the market.

Prof. Goff—For the local market, or for shipping?

President Loope—Local market.

Prof. Goff—Well, I should want a dozen perhaps of the Aitkin, a few of a kind that we are all growing, of the Odegrade, because that makes a good succession with the Aitkin. Then I should want about 15 of the Quaker, and about 25 of the Surprise, and about 25 of the Brittlewood, and the rest I should make up with the Hanmer, the Baumberger, the Etta, the Silas Wilson, and that is certainly enough.

Mr. Marshall—Do you leave out the Wyant entirely?

Prof. Goff—I did not intend to leave out the Wyant; the reason I did not mention it at first is because it is also a late plum; the Wyant should come in after the Surprise. I see I am getting more than 100, but I should want about 25 Wyants, too. The reason I leave out the De Soto is, not because the De Soto is not a good plum, but we have plums that are quite as productive that are better in quality than the De Soto.

A Member—Have you had any experience with the Wolfe plum?

Prof. Goff—We have. It is a nice plum, but with us it does not fruit well; I have never been able to explain it. The Wolfe plum is generally called very productive, but with us it is not productive.

A Member—How about the Cheney plum?

Prof. Goff—The Cheney is about the same as the Aitkin in its quality, but it is a little later, and with us it has not borne quite as well; it may have borne better possibly with others than it has with us.

Mr. Smith—You said nothing about soil; would you make any particular difference in the selection, if we had a difference in the soil?

Prof. Goff—I suppose I would, but it would be made according to experience.

Mr. Hatch—These are all really Americana.

Prof. Goff—All that I have mentioned, yes.

Mr. Hatch—The Brittlewood is not pure Americana?

Prof. Goff—Well, for all we know to the contrary, it is. The reason I include only Americana is because Americana is the only species with us that we can call hardy, that is, the flower buds are strictly hardy.

SEEDLING PLUMS.

By Prof. Goff.

WHAT IS A SEEDLING PLUM?

That all my hearers may understand what we mean by “seedling plums,” I explain that a seedling plum tree is one that grew from a plum pit instead of from a graft or a bud, as the nursery plum trees are commonly grown. The important difference between a seedling plum tree and a plum tree grown from a graft or bud is that the seedling tree will not often be of the same variety as its parent, while the tree grown from the graft or bud will be, with rare exceptions, practically of the same variety as the one from which the graft or bud was taken. Since the seedling is generally different from its parent, it has a chance of being better than its parent, and this is why it is important to grow seedlings. By saving the very best of our seedling native plum trees and growing seedlings again from these, we will certainly be able to improve this fruit. Our chances of being able to improve our native plums are greater than they would be of improving the European or the Japanese plums, because our native plums have but recently been introduced to culture, hence their improvement may be said to have only just commenced.

FROM WHAT VARIETIES SHOULD WE SELECT OUR SEED?

This is an important part of our subject. Our native plums, especially of the *Americana* class, need improving in tree as much as in fruit, and we can no longer afford to work toward better fruit only. The desirable qualities of our native plums will occur to all who are much acquainted with them. I would rate these in nearly the order named, beginning with uniform productiveness, following with size and quality of fruit, vigor and strength of tree, health of foliage, color and keeping quality of fruit, thinness of skin, size of stone, etc. The variety, be it named or not, that possesses the largest number of desirable points and the fewest undesirable ones, is the best one from which to save seed. We can hardly exercise too much care in choosing our parent variety.

The most promising field for improving the native plums is doubtless through hybridization of different species. The *Americana* and *chicasa* species cross freely and so do the *Americana* and the *triflora* or Japanese species. An excellent way to secure hybrids in large numbers, with very little trouble would be to plant groups of the two species it is desired to cross at a distance from all other plums, and then to save and plant all of the pits from these groups. If the trees of the two species are in bloom at the same time, the pits will produce a large proportion of hybrid trees. Our native plums are infertile to their own pollen, and if we plant only two varieties in each group, the plums that grow on the native trees, at least, will be hybridized.

HOW SHALL WE GROW SEEDLINGS?

After making several trials, we have had best success by packing the pits from the ripe fruit in a box or barrel with plenty of moist sand, placing the receptacle in a cool cellar until winter and then setting it out doors in a place that is sheltered from the sun, leaving it there until spring. Very early in spring sow the seeds thickly about one-half inch deep in well prepared loam in rows three and one-half feet apart and cover the planted rows with fence boards to prevent washing and keep gophers

away. As soon as the seed leaves begin to appear above ground remove the boards. No further attention is needed until autumn, except to keep the ground well cultivated and free from weeds. It is well to take up the plants late in autumn and bury them in the ground in a well-drained place. This insures protection from mice, rabbits and from heaving of the ground. Whether they are taken up in the fall or not, they should be transplanted the next spring, either to their permanent place, or in other nursery rows, where they are given more room.

We have had seedling plum trees bear well the third season from the pit, but as a rule they will not bear much until the fourth year, and some will not bear until the fifth year.

DOES IT PAY TO GROW SEEDLING PLUMS?

From our experience the fruit from seedlings from the best named varieties will average better in size, quality, and quantity than that from named varieties taken as they run. The seedling trees are also less expensive, while the chances of securing an improved variety give an added interest to the work. Judging from our experience an orchard of seedling plums, grown from the choicest varieties only and given the best care, will prove a profitable investment from the market value of the fruit produced. Of course, an orchard of the choicest named varieties, planted after testing them on the ground, would prove much more profitable than the seedling orchard.

In conclusion, I would remind you that the progress we may hope to make in improving the native plums will depend chiefly upon the number that are engaged in the work. This work should not all be left to the Experiment Stations. It is doubtless true that the largest number of improved varieties of fruit have come from the efforts of amateurs. We have but one experiment station, but we have thousands of farms that can and should grow plums. I am glad that some premiums have been offered in our Society and at our state fair for the best seedling plums and I hope these may aid in awakening an interest in this important subject.

DISCUSSION.

Prof. Goff—The work of improving a seedling is one that requires much careful selection and judgment. The dangers that amateurs are likely to fall into is that they have not the wide knowledge of varieties and they plant seeds, and because they get seedlings that are fairly good they think a great deal of them because they are their varieties, and that is the danger of amateur work. I would do everything I could to encourage amateurs to grow seedlings, but before they go very far with their new varieties, they should submit them to some competent authority who is well informed on present varieties and on the needs of varieties, in order that they may be sifted out before they are propagated. The great danger is, as it always has been, in the getting of too many varieties. We have perhaps five times as many Americana plums as we ought to have. The really valuable varieties could all be found in about one quarter of the varieties and the cumbersome list of names is a nuisance to the nurseryman and a source of danger to the man who wants to buy plums to plant.

Mr. Hockney—What time do you plant the pits in the fall?

Prof. Goff—We plant them in the spring, but we stratify them, as we call it, in the summer. We pack them in sand and leave them till spring. We have tried planting them in the fall, but the danger of their washing out during the winter is so great that we prefer to keep them out of the ground till the spring.

Mr. Kellogg—I tried the experiment of planting pits, but did not meet with success.

Prof. Goff—We have very much better success by spring planting. We will be able to show you tomorrow, I hope, our spring planting plums planted this last spring.

The President—In answer to Mr. Kellogg's suggestion I want to make a suggestion. In my opinion the plum pit should never get hard and dry before it is planted.

Prof. Goff—That is correct, I think.

The President—What did you do?

Mr. Kellogg—They were all thoroughly dry.

The President—That is the point we have been wrecked on.

Secretary Herbst—Could you take those pits and crack them open and plant them? Could you take the pits, lay them away for a month and then crack them open and plant the seed?

Prof. Goff—It is not necessary to crack them open.

Secretary Herbst—The only benefit you would get would be that they would grow quicker.

Prof. Goff—They will grow so quickly in the spring that it is very difficult to plant them before they will grow. So they will grow quick enough and if you plant them in the fall they will simply remain till spring.

Secretary Herbst—Your object in putting them in the sand is to keep them from drying out?

Prof. Goff—It is to keep them away from the gophers and from washing out. We have tried covering them with boards. That is a partial remedy, but not a complete one and gophers are very fond of plums late in the fall and early in the spring.

Mrs. Treleven—When you come to plant them in the spring when they have been in the sand all winter, are the pits at any time cracked when you put them in the ground?

Prof. Goff—They are always more or less germinated.

Mrs. Treleven—You have to be careful not to break off the shoot?

Prof. Goff—Yes, they should be planted just as early in the spring as it is possible to get the ground ready, and I would recommend placing them in the coolest place that you can find in the winter, put them on the north side of a building. We used to bury them in the ground on the north side of a building so as to keep them back in the spring as long as we could. They tend to sprout almost as soon as the frost is out of the ground.

A Member—If you plant them in a group and get a cross between the Americana and Chickasaw, which do you use the pits from then?

Prof. Goff—You mean after I've got my cross?

The Member—Yes.

Prof. Goff—I think I should plant both of them.

Mr. Toole—I saved some plum pits last winter, stratified them, put them on the north side of the house and supposed

everything was doing well, but I had not burrowed down deep enough and covered with sand, and in taking them out, and before it was time to plant them, they dried out pretty thoroughly, and I am satisfied that it was that carelessness in giving them a chance to dry out that injured them severely, so I would suggest that others look out for that, that they do not at any time get dried out. Do you think, Professor, that it would be advisable to plant different varieties of plums in groups to secure perfect pollenization?

Prof. Goff—Yes, I would not recommend planting in groups, but I recommend mingling, putting one row of one kind and one of another.

Mr. Smith—Is it a fact that all Americana plums are sterile in themselves?

Prof. Goff—It seems to be the fact. It is said that the Robinson plum, the Chickasaw plum is self-fertile, but the number of those that are believed to be self-fertile is exceedingly small, not more than one or two Americanas and one or two Chickasaws.

Mr. Toole—There was one fact touched on in the first paper in regard to planting plum trees in the poultry park because they do so much better there, certainly not because they get better cultivation, but because the poultry keep down curculio. Well, if we go into it extensively we are not likely to keep poultry enough to match the plum trees and we have got to fight it in some other way, and I think we better keep up as closely as we can to the curculio and gouger and if we can not head them off we can not get plums. Last winter we were told something at Oshkosh in regard to keeping them back by spraying with Paris green, or something of that kind. I do not know how much that will help, I am afraid we can not depend on that.

Mr. Hatch—Professor Goff spoke in regard to seedling plums that the selection of good varieties was desirable as a foundation to build new varieties upon. Now while he gives that general idea, he did not specify. I want to specify a little and then let him add perhaps. We have in the plum, I think, in any fair plum exhibit that you may see at any of the middle state

fairs or expositions, probably eight or ten classes or families or types of this fruit. We have the *Prunus Simoni* that looks more like a tomato than any other one; we have the European varieties such as the Lombard and Green Gage; then the Americana, like our De Soto and our Rollingsstone, and plums of that class and then have a special class like the Aitkin and the Cheney and then we have the Wild Goose and we have the Jobson and we have the Chickasaw. All those distinct classes are capable of more or less hybridizing or intermixture, but the Americana plums will hybridize freely with the Japanese, and the Japanese with the Americana, and some wonderful things have been produced. Now if we are going to produce new seedlings it is desirable that we have certain types of character among those of the widest variation. In the Americana class, which seems to be the most hopeful one for hybridization, is the Weaver. It has a dry flesh and is a nice freestone, which is very desirable in a plum as much as in a peach, but it has a flesh that is distinctly different from the De Soto and Rollingsstone. Now it would be a good foundation to produce some seedling, or hybridize, or even cross with some more Americana.

Prof. Goff—Mr. President, those of you who have read our bulletin No. 87 will find a list on the last page of those varieties that are specially recommended for crossing with each other, that seemed to combine, at the time I wrote it, the desirable qualities to the highest degree. That is we have one, the Freeman, is selected as being ideal in color, the Brittlewood in size, the Surprise in quality and hardiness, and so on. If I undertook to name a list of varieties I think that I could possibly improve on it a little, but I think the list is a good one.

Mr. Hatch—Is the Freeman a pure Americana?

Prof. Goff—The Freeman is a Chickasaw plum.

Mr. Toole—Are there some varieties that you have planted from that have shown more promise than other varieties in their seedling?

Prof. Goff—Yes, the Wyant plum and the Quaker have shown excellent seedlings. On the other hand we have certain varieties that have shown no improvement.

Mr. Toole—Have you tried the De Soto much?

Prof. Goff—We have not tried the De Soto.

Mr. Smith—If you take two plums that will not fruit either one by itself and put them side by side, will both of them fruit?

Prof. Goff—Very likely will if they blossom at the same time.

Mr. Smith—More apt to than if they would be alone.

Prof. Goff—Very much more apt to.

Mr. Toole—My boy has kept a record of the time of blooming of the few varieties that we have; could we make that of any value?

Prof. Goff—You might. You will notice in our last bulletin we give a record of the time of blooming of all our varieties that have fruited up to that time.

PRESERVING AND CANNING OUR FRUITS.

Mrs. Jos. D. Treleven.

Mr. President, Ladies and Gentlemen:—It was a surprise to me when your good secretary asked me to write a paper on this subject, for I do not claim to be a professional in this line, but have been very successful in canning the fruit needed for constant use in my large family, always putting up fruit sufficient for each season's use, never buying canned goods.

There is an art about preserving and canning. Pleasure and profit wait upon this art when it is once learned. The table reflects the thriftiness of the housewife if it shows various fruits tastefully preserved. The old custom of our grandmothers of preserving (a heavy sweet manner of "doing fruit"), is too rich for most tastes, and in this age jams, canned fruit and jellies have largely taken its place. All preparations, no matter under what name they are sold, are injurious.

To be successful with fruits absolute cleanliness must be observed. This does not mean simply washing and wiping the cans; it means to have them absolutely sterile, sufficiently heated to kill anything that may fall into or upon them from the air:

The process of canning different small fruits varies but little. Select perfectly sound and fresh fruit. Here is one of the secrets of keeping canned fruit. Having generally grown the greater part of our fruit, it is picked and canned fresh, not allowed to get over-ripe, canned as soon as possible after being picked or gathered. It may be canned with or without sugar. Sugar takes no part whatever in their preservation and oft-times causes fermentation. All fruits should be lightly cooked (fruit does not require as much cooking as some are ready to believe) that they may retain their natural flavor. Cans should be filled to overflowing, for as the liquid cools it will condense. Scald the cans and rubbers; be sure not to use old and poor covers and rubbers, for that has spoiled many cans of fruit. When you are ready for canning, put the covers into cold water and bring slowly to boiling, allow them to stand in this boiling water until you are ready to use them. Look over the fruit carefully, wash and put in a granite or porcelain kettle, then add the sugar. (I use just enough to make the fruit palatable for table use, some kinds requiring more than others.) Let stand a few moments to dissolve the sugar somewhat, and extract some of the juices before heating them, then let them come to a boil for about a minute for most small fruits. Place the cans on a cold damp folded towel to prevent breakage, fill to overflowing and turn the covers on tight; as the cans get cool the covers can again be tightened. As I have a large family to put up fruit for this is the way I usually do, as I can do it more rapidly than filling the jars with the uncooked fruit and putting them in a boiler of cold water (which has been provided with a rack in the bottom), filled nearly to the tops of the cans, and then let boil from 10 to 15 minutes, which, I readily admit, is the best way to have fruit retain its shape, but as far as the keeping quality is concerned I do not think there is any difference.

In canning peaches and pears I peel, taking out pits or cores, keeping them closely covered, and make a syrup, cooking only a small quantity in the syrup at one time, care being taken not to break the pieces. Fill the cans with the pieces of fruit, then pouring on as much of the syrup as the can will contain, and cover as for other fruit.

For canning apples I do not use sugar, and in this way they retain their flavor and color. They are just as nice for sauce and pies as fresh apples. This I consider the best way to take care of some of our early apples which are so perishable. In canning our ordinary plums, after washing, I put a quantity in a granite kettle and cover with cold water; let them come to scalding point; then put a small quantity of soda in the water, which will make the skins tender and take away the puckering taste that some plums have; skim out and add the sugar and can in the usual way.

Jams are quite extensively made at the present time. In making jams the fruit should be carefully cleaned and bruised, as mashing it before cooking prevents the fruit from becoming hard. Boil fifteen or twenty minutes before adding the sugar (as the flavor of the fruit is thus better retained), and then boil slowly for one-half hour longer; allow about three-quarters of a pound of sugar to a pound of fruit. Jams require almost constant stirring and every housekeeper should be provided with a paddle for the making of jams and marmalades.

I suppose jellies properly belong to this subject. The juices of some fruits will not easily form jelly and only a very few that will jelly without sugar. There is no reason, however, why jellies should always be made a pound of sugar to a pint of juice. Quinces and currants, as well as the ordinary crab apple, cranberry and green grapes are made better where only half a pound of sugar is allowed to a pint of juice. Small fruits should be simply mashed and drained. Boil the juices and skim, have the sugar heated hot, then add slowly, constantly stirring until the sugar is dissolved. Generally it will be jellied by the time it comes to a boil. You can try a little in a saucer, and if it wrinkles, or you can hold up the spoon and if it hardens as it falls, it is ready for the glasses. It should be skimmed and strained. If it is boiled too long it will rope and be like syrup and will never go back to the jellying point.

For apple and crab apple jelly wash the apples and quarter. Do not pare; put in a granite or porcelain-lined kettle, cover with cold water and bring to boiling; turn into a jelly bag and drain; boil and skim, add the sugar, boil and skim and pour

into glasses. If the jelly seems thin it will help to thicken by standing in the sun a day or two. I prefer to keep all canned fruit in a cool dark place, because they lose flavor and change color by being exposed to the light. Jellies should be where it is cool, dry and dark.

Any one with a little practice and patience can master the art of canning, preserving, making jellies, etc., etc., and what can add more to the comfort of the family and the adornment of our tables than these delicacies in readiness for use when the "good man" brings a friend or stranger in on short notice for a good meal.

As the secretary requested me to only write a short paper on this subject, perhaps I have already gone beyond the allotted time.

DISCUSSION.

Mr. Toole—We all like jelly from native plums and I would like to ask if it is more difficult to make jelly from native plums than any other fruit?

Mrs. Treleven—I do not think so if you take them before they are perfectly ripe. You want to take them when they are in the green state.

Mr. Toole—Is not that true of every fruit for jelly?

Mrs. Treleven—I think so.

Mr. Edwards—How much sugar do you use in strawberries or raspberries per can or quart?

Mrs. Treleven—I would not use more than half a tea cup full for a quart can.

Mr. Edwards—You do not sweeten the apple at all.

Mrs. Treleven—Not at all.

Mr. Edwards—You do the pear and plum?

Mrs. Treleven—Pears and peaches I always put up in syrup. I make the syrup of granulated sugar.

Mr. Edwards—You never lose any apples?

Mrs. Treleven—Never lose a can of apples and I have opened many cans that my husband would say, "Why, where did you

get your fresh apples?" No one could tell them from fresh apples just cooked. I used to put them up this way with sugar, but I found by not putting in sugar that they held the flavor better.

Mr. Hatch—Can you make them keep by cooking lightly rather than thoroughly?

Mrs. Treleven—Well, you take good sized apples and cover them tightly; put cold water on them to start with and by the time you get them boiling they are ready for canning.

Mr. Hatch—Can you make white jelly from white currants?

Mrs. Treleven—Yes.

Mr. Hatch—How do you manage it? I know you can make dark jelly from white currants, but how can you make the white jelly?

Mrs. Treleven—In making up jellies often times housekeepers do not put in all their time attending to their fruit. They will put their currants into the jelly bag and go out and do other work and they will allow that juice to drip for two or three hours and by the time they get ready to put it on the stove to cook it, it has changed its color. If you want to keep it white you must take this liquid and cook it as soon as you can.

Mr. Hatch—Would the length of time influence the color?

Mrs. Treleven—Yes.

Mr. Hatch—If you cook it too much would it be dark?

Mrs. Treleven—Yes, it would be darker if you do not cook it quick enough; if you attend to it in time there is no difficulty in having to cook it very long to make jelly. You can make jelly from apples and you can have it red or you can have it white. The same is true of crab-apples. I like the Duchess for jelly, and the Wealthy apples are fine canned.

Mr. Toole—I think people have been making a mistake in canning fruit by being too generous with sugar. In raising raspberries for the market my wife often canned them and people wondered why they were so good and when told they were surprised that we used less sugar than they used. I think they often make a mistake in over-sweetening.

Mrs. Treleven—If I did not think that they taste a little better by being sweetened ready for the table, I would just as soon

put them up without sugar, although when you come to sweeten them you have to make them in the form of syrup to sweeten them.

Mr. Toole—Inquiry is made by my neighbor as to how you cover your jam and jelly?

Mrs. Treleven—I find paraffine the best.

Mr. Toole—Directly on the fruit, or paper between?

Mrs. Treleven—Why I do not know that that makes any particular difference. I think it is just as well to run it right on to the fruit if your fruit is good and heavy and it generally is in jam.

Prof. Goff—I would like to say a few words about canning plums. I find there is a great deal of difference in Americana plums canned, depending upon the manner the work is done. I knew two or three ladies who tried canning them and gave it up in disgust, said the plums were not fit to can. Then I know another lady who canned some and invited these ladies to try them and they agreed that they were as good as any they had eaten. The astringency of the plum will disappear if the right method is used, and no soda need be used either.

Mr. Toole—What is the method?

Prof. Goff—I do not know whether I can trust my memory to give the receipt, but the fruit is peeled and I think put into the cans and then the cans are filled with a syrup that is made out of the sugar with just enough water added to make it liquid, that is, very rich syrup. They are brought to the boil and allowed to boil one minute. Last fall as an experiment we desired to know whether the Americana plum can be recommended for canning and we knew of a lady who had an excellent reputation for canning the fruit, so we took some of the plums to her and she canned them and then we had a committee appointed to taste them and it was the universal agreement of the committee that it was very fine. There was no astringency; we put up one sample peeled and one unpeeled and there was no more astringency in the unpeeled than the peeled.

Mr. Toole—How did they get rid of the astringency?

Prof. Goff—There was no astringency. I do not know what became of it.

Mr. Edwards—What process did they go through to rid it of the astringency?

Prof. Goff—There is no process except that I have mentioned.

Mr. Edwards—What variety was used?

Prof. Goff—We tried different varieties; tried some of the most astringent varieties. We had the Hawkeye, the Quaker, and the Wyant. The Wyant sometimes when it is poorly grown, in a dry season, grown in grass, will be so astringent that it is not fit to eat.

Mr. Toole—In peeling, do you scald them, or how can you peel the cold fruit?

Prof. Goff—I think they were scalded. Some varieties peel very readily when they are fully ripe, but this fruit was taken when it was hard, it was well colored, but it was hard.

Mrs. Treleven—Prof. Goff spoke about some plums that would be all right put up with syrup. That is so, we have some plums that I always put up with syrup, but I was speaking of common orchard plums that we get from the woods and such places as that and there is that puckering taste; if you do not take that out it will be almost impossible to make them nice. But of course if you take good large plums, the same as some of those back here, I put them up with syrup the same as I do peaches and pears.

A Member—Will Mrs. Treleven please tell us how much soda she uses; she said a little, that might mean a pint or a teaspoonful.

Mrs. Treleven—I think the kettle I use ordinarily probably holds about eight quarts and I use about a teaspoonful and that is enough for the whole eight quarts, just an even teaspoonful; it will froth and the minute it stops frothing skim it off.

THE CHILD AND THE GARDEN.

Mrs. C. E. Bushnell, Appleton, Wis.

Either of these subjects is interesting and the very names suggest a process of cultivation. Tact, genius and industry find in these two objects a fruitful field for the application of their own virtues.

Gardens are associated with a cultivated age and race. Where they flourish public conditions are favorable. Peace hangs over the land so that every man can safely dwell under his own vine and fig tree and communities have done with their nomadic habits and have become attached to the soil. From the very circumstances of the case the wandering tribes of Asia have to dispense with the luxury of gardens and thus a very important civilizing influence is wanting to them. The literature of the Bible, which records the history of the Jewish nation, is very much wanting in imagery and metaphors borrowed from the garden. It was not till Israel had done with her wanderings and wars, and had conquered a peace and become established in the land that gardens greatly bloomed under the fostering care of King Solomon. We may fairly infer from the king's effusive description of these gardens that one of his principal pleasures consisted in frequent visits to these charming resorts. King Solomon never did anything by halves, and we may be assured that his gardens were, like all the other departments of the state, constructed on an immense scale. It is not strange that the southern queen was wonder-struck at what she beheld while making that historic visit. Like any woman she loved flowers and it was here she found them of every hue, shape, name and quality. Fountains were continually keeping plants fresh and green, and a soft delicious fragrance filled the atmosphere. Spices yielded up their rich perfumes and fruits of every sort were in abundance, especially the apples which were invested with such a relish as to be almost indispensable to the comfort of the king. The world has ever loved gardens. The

wise Bacon says in his quaint and old-fashioned way in an essay: "When ages grow to civility and elegance, men come to build stately sooner than to garden finely," as if gardening were the greater perfection.

But if gardens have great possibilities, latent and waiting to be evolved, what of the child who may possess latent talents, which developed, will astonish the world?

The child in the beginning of his career is cribbed and confined, but with proper education he comes to a stage of culture which demands,—is the language too extravagant,—the universe for his play-ground and workshop.

We must never begrudge the expense of educating children. Think of the dreary distance between the cultured and uncultured mind! Think of what a distance the mind of Sir Isaac Newton traveled from playing with the tiny toys of childhood to the discovery of the law which holds the heavenly bodies in their proper place and course,—the law of gravitation! Nature is a vast field for the operation of active agents of all degrees of capacity, from the spiritual down through the human, animal and vegetable that have life. The small area of a garden where Newton is said to have made his great discovery may well be the microcosm which illustrates and symbolizes the vast outlying field of nature beyond. The modern garden, unlike the garden where Adam and Eve enjoyed their short period of innocence and happiness, to our view, has its serious drawbacks. The great Creator, as we have been told, made everything good in its time. He looked upon the work of his hands and was pleased. But like a dwelling house, fitted up with all the art that skill and genius can devise, and then let out to unworthy tenants, is not the same dwelling as before, so nature itself has deteriorated. It has been invaded by hordes of agents that act as they were not made to act, man especially and recreant angels who are responsible for the mischief. Thus confusion has ensued; innumerable conflicts have been precipitated; everything has become jarring and discordant, and in the words of the Great Apostle, "The whole creation groaneth and travaileth in pain." From the standpoint of a garden, as well as a general outlook over humanity, as it appears to us from the pages of

history and the modern daily journals of events, we are impressed with this great truth. In the quiet gardens of today we can trace out the footsteps of the original disturber and his followers. It would be tiresome to point out in detail the difficulties that beset the gardener; they are legion. Here right under our own eyes the tragedy of the conflict for existence is acted out and unfortunately in many cases the fittest do not always survive.

In a small way what happens and transpires in this little world well illustrates and symbolizes the greater conflicts that affect nations and shake the world.

And here are innumerable lessons for the child. Let it be understood that the garden is one of the main accessories of a child's education. The school or college is essential, of course, but the garden will supply material for thought and it will make practical these lessons. It will produce a multitude of facts, and the sooner a child is initiated into the mysteries of plant life the better.

"There is a lesson in each flower,
A story in each stream and bower;
On every herb o'er which you tread
Are written words which, rightly read,
Will lead you from earth's fragrant sod
To hope and holiness and God."

I wish to say right here that I have no sympathy with that system of repression which is ever saying to a child, "Don't! Don't ask so many questions. You trouble people. Children should be seen and not heard!" Why, that is just what they are here for—to be heard. Encourage in the child the habit of questioning. If he becomes too troublesome ask the questions yourself and set him to thinking, and he will be silent for a time, at least until he has compassed the bearing of the idea advanced. Ask him, for instance, why it is that the trees, the grass and the potato vines are green; why should they not be some other color as well? Let him think for a moment what would be the effect if everything were a bright scarlet color. After thinking it over he will come to the conclusion that it is all right that the universal color is green. It is softer and more

restful to the eye. Explain to him, if he is old enough, to comprehend the philosophy of it, in a manner something like this: Imagine a sunbeam playing upon a leaf; part of its waves bound straight back from it to our eye and make us see the surface of the leaf, but the rest go right into the leaf itself, and there some of them are used up and kept prisoners. The red, orange, yellow, blue and violet waves are all confined to the leaf, and it does not let them go again, but it cannot absorb the green waves, so it throws them back and they travel to your eye, making you see a green color. So when you say the leaf is green, you mean that the leaf does not want the green waves, but sends them back to you.

Call the child's attention to a few striking illustrations of the characteristic facts about flowers. You may easily develop his curiosity into intelligent research. Explain to him the importance of insect visitors. Show him the relationship between the *shapes* of such flowers as the carnation and the morning glory and the sucking mouths and the proboscis of the butterfly and moth. Show him how the small flowers have learned to group themselves in masses and aggregations in order to attract insect attention. Give him his first lesson in political economy by teaching him that sunflowers, dahlias, daisies and chrysanthemums are not single flowers, but floral communities in which the altruistic ray florets live entirely for the benefit of disk florets. Teach him to recognize the law of compensation in the fact that brilliant flowers are often scentless, while obscure flowers like the mignonette and violet wage their modest struggle for existence by help of their fragrance. Point out to him that the acrid leaves of the buttercup, the stinging cells of the nettle, the prickles of the gooseberry, the thorns of the rose and the poison of the wolfsbane are weapons used by these plants to defend themselves against the attack of animals. Encourage him to observe the various devices adapted to disseminate seed; the feathery tufts of the dandelion; the silky sails of the milkweed; the prickly heads of the burdock; the snapping capsules of the jewel weed. Of course all this information must be adapted to his years and development, or as he is able to read, learn, mark and inwardly digest.

Commence the young boy's garden career by investing him with a complete set of small garden utensils, as we have done with our little boy. It is possible, even probable, that potatoes will be dug a long time before they are ready to be dug; that tomatoes may be transplanted a time or two too many, and that growing corn is liable to be thinned out to a degree quite unnecessary to its growth. But while he is doing this he is growing in strength and experience. He is not getting under the wheels of the street car, nor running the streets to no good purpose. Even in doing mischief some good is accomplished. So thought this boy when he was discovered busily clipping, with the shears, the buds from a beautiful peony plant. On one side the buds were already gathered, and he was about to pass to the other side to complete his work of beheading the innocent plant when his hands were arrested. Doubtless he imagined he was beautifying the plant by thus removing the unsightly buds, but when in a few days the unmolested side of the peony was crowned with a score of fragrant pink blossoms, he was convinced of his mistake. And so he learns there are some things which are strictly to be let alone, while there are others which are to be destroyed on sight, as common enemies. There is no labor that becomes very tiresome or tedious if you can only attach thought and interest to the process. It seems that the modern idea of child education is based upon this principle. Culture must go hand in hand with manual labor. "The man with the hoe," as depicted by Markham, "with the emptiness of ages in his face and on his back the burdens of the world," will soon be—God speed the time—a lost and unknown quantity. To all appearance there was never, in the history of the world, such an interest displayed as at the present, in the right training and education of youth.

The eyes of the world are turning hopefully to the children of this generation, as to the one that shall be able to cope successfully with the serious problems that confront us. Here is the hope that the superior intelligence and virtue of the coming generation on the stage of action will exact right conditions as a substitute for some of those prevailing now, which are lamentably wrong. The future weal or woe of society depends upon the solution of these problems.

As we see the children, at the edge of evening, playing their childish games, in which they become as much interested as though mighty issues were at stake, I cannot resist the inclination to avail myself of some airy conveyance and in imagination transport myself to the not very distant future, when these boys and girls will have outgrown their playthings and childish games and settled down to the serious work of life. Will they put into their work the same energy and vim that they employ in their youthful frolics, or will they be heavy in spirit as they bend over their tasks and do what they have to do, as by unavoidable constraint? It will be, I am thinking, just as they are trained, and the elements of future success are comprehended in that training. They should be taught to be systematic, in the highest degree, observant of details pertaining to their occupation, and especially they should be led to choose, if possible, that sort of occupation for which they have a natural aptitude. And this being so, they will bring to their work a love and zeal that will always make it a pleasure to them as well as a success.

HORTICULTURE AND FLORICULTURE AT THE PAN-AMERICAN.

Mrs. A. D. Barnes, Waupaca.

The followers of Flora and Pomona sometimes find their duties commonplace and wearisome. Winter, spring and summer, year after year, pruning, grafting, spraying and nurturing become at times tedious obligations. When, however, in the later seasons these goddesses celebrate their annual festivals, it is a satisfaction and joy to be numbered among the patrons of the rural deity.

Since Rome no longer makes worthy recognition of these divinities the floratia is celebrated in our own land with a purer service. This season the floratum is spread in a city by our inland sea—like to that ancient Mediterranean, surrounded by great regions of vine and shrub and fruit tree. The grounds are

laid out with winding walks, encircling plats of beautiful flowers of every shade and hue. Even to the water's edge of the miniature lakes the flowers bloom.

Here, too, a pomonal is erected and consecrated. The goddess has received an offering from her devotees from nearly every state in the Union. Here daily worship is the admiration and praise of the exposition thousands. The rarest flowers and choicest fruits bear witness to our ideals and triumphs.

I will invite you all to accompany me through the floral garden and pass beneath the arch and enter the horticultural building.

We stop and look with amazement upon the beautiful display of fruit.

First to arrest our attention (it being nearest the entrance) is the California exhibit of fruit from their state. It is very artistically arranged with arches covered with the California moss and decorated with oranges and lemons. Other fruits were in large glass jars, such as whole stems of grapes, peaches, pears, prunes, olives, grape fruit, cacti fruit and pomeloes. Then their dried fruits were in glass cases, so arranged as to present a fine appearance. Also fine, fresh Burbank plums, a new creation, dark purple in color, larger than our Lombards; the meat a dark yellow and looked very tempting. They exhibited a Burbank potato twenty-seven inches long, in a glass jar, though I was told the majority of their tubers did not attain that size. Opposite their exhibit of fruit was a modern house built of their canned fruit in tin cans, with peaches in glass jars to represent the windows; it was very unique in appearance.

Farther down the aisle is the Missouri exhibit of apples. Had a large display of apples, but a very few varieties; were nearly all in glass cases, with notice of "hands off" or "please do not handle." They claimed to have the largest Ben Davis apples grown, and surely they deserved a goodly amount of praise.

Their display of Gano, Huntsman and Black Twig were fine. They had displayed six carloads of apples and one carload of berries since the 20th of last May.

Oregon made a fine display of fruit of different varieties in glass jars; a small exhibit of apples, though very creditable; a

fine display of plums and cherries; had grown the Bing cherry as large as one and one-half inches in diameter. Their peach plums were very fine and palatable.

In the place of cards with "hands off" printed on them, they had plainly written on card board these words, "As the children of Lebanon passed through the land they saw the fruit, but according to the law of the land they ate it not."

Also another card with these words, "And the Lord said unto Moses, thou mayest behold the land, but thou shalt not enter therein, nor of the fruit thereof shalt thou eat."

It created considerable comment and laughter. The Lowellling cherry from Washington was displayed on plates for ten days through the very hot weather and still was in fair condition.

Connecticut had a small display of apples, currants and other small fruits, including the wooden nutmeg, which was festooned around their booth.

Michigan's exhibit of apples was small, but a fine display of cherries—the Black Heart, Napoleon, Montmorency and other varieties; also peaches, plums, pears, blueberries and currants.

Mexico's fruit exhibit is all in wax, of all varieties of fruit and some vegetables. It showed their willingness to do what they could.

Illinois has a very large and fine display of apples from the crop of 1900; had exhibited 211 varieties of cold storage apples that had been picked especially for this exposition. They had on their tables fifteen varieties of 1901 crop. Their Yellow Transparent had been on their plates three weeks. The Stark apple had been on the table since the 21st of May; the Ben Davis and Black Twig since the 8th of June. Their display was fine and was where it could be seen to a good advantage; did not exhibit small fruit, but a few pears and peaches.

As we pass along the east side of the horticultural building we notice the New York state exhibit of fruit. They had displayed in all 345 varieties of apples; had on the table at one time 250 varieties, all cold storage apples; exhibited a few varieties of 1901 crop. Their display of small fruit was fine. The currants

attracted considerable attention; displayed King's Sweet, Red Dutch, Mills' collection, Prince Albert, Shultz, Empire, London Red. The Red Cross was very large and of fine flavor for a red currant, but the Fay was the largest of them all. The White Dutch, White Grape, Purity, Crystal, Imperial, were the finest of the white currants. Plums, peaches, blueberries, raspberries, were also displayed. The Cooper strawberry, a fall bearing variety, was shown and pronounced fine, indeed. They exhibited about one bushel of apples that had been on the table since the 19th of May; the majority of them were in a fair condition. Displayed 108 varieties of gooseberries from New York Experimental Station and they were fine.

Chautauqua county, New York state, has a fine exhibit of currants, dewberries, seedling black raspberry, gooseberries, apricots, cherries and pears. Their display of black currants was fine, including the Lee, Baldwin, Saunders, Naples, Victoria and others; also they had on display the Rathbun blackberry that measured 3x4 inches; were placed on plates Wednesday and on Saturday they were in fair condition in spite of the very warm weather. Their dewberries were very large, a seedling, I think.

One very interesting feature of the display was the Chautauqua climbing currant; it is supported on a trellis as we support grape vines; had fresh branches with fruit on, and surely the currants were fine. They claim that one root will produce 30 quarts of currants and make a fine shade for an arbor at the same time.

Chautauqua county was the only county exhibit of fruit.

Across the aisle is the Nebraska exhibit of fruit, and I must say that it is astonishing to know that such fine fruit can grow and mature so nicely in that sun-scorched state. Displayed 15 varieties of apples, the crop of 1901. Their collection of the Williams plums were exceptionally fine—about 30 varieties; a few prunes and peaches. They had but just placed their exhibit and hoped to add considerably to it later on.

Next door neighbor to Nebraska is the Wisconsin exhibit. I fear there is not much I can say in regard to the display, as it was in its formative state about the 10th of August. At that time there was 13 varieties of apples—the Duchess, Yellow

Transparent, Haas, Sops of Wine, Switzer, Early Summer, Moscow, Red Astrachan, Tetofska, Rose, Lobs Queen and Yellow Sweet. One plate of native blackberries and one plate of native grapes, which created considerable comment, also a few plums, were displayed. The exhibitors were: Parson & Loope, E. Harris, Wm. Toole, J. L. Herbst, A. D. Brown, Prof. E. S. Goff and A. D. Barnes. It was very amusing to hear people say, as they approached the exhibit, "What exhibit is this? Oh, Wisconsin." "What! do they raise apples in Wisconsin? I thought the climate was too cold to grow apples." "Are they really apples?" I must say we were actually proud of our exhibit. Considering the material at hand Mr. Parsons deserves much credit in arrangement of display and in caring for the same. Mr. Hatch has been with him of late and no doubt but Mr. Hatch has been of valuable assistance.

The province of Ontario has a fine display of all varieties of fruit; had exhibited 60 varieties of apples; their currants, gooseberries, blueberries, plums, peaches and all other fruits were exceptionally fine.

Idaho has a small exhibit of apples, plums and pears; they were all very good.

Virginia 15 or 20 varieties of apples and they made a very creditable showing.

Arizona's display was from their experimental station at Phoenix, consisting of 20 varieties of grapes, pomeloes, prunes, peaches and almonds.

Delaware also made a fair display of apples and other fruits.

Florida has a fine exhibit of tropical fruits and plants, canned fruits and jellies, pomeloes, mangoes, bananas, pineapples and cocoanuts. They displayed bananas and pineapples in bloom. Their booth was hung and trimmed with their moss, tropical grasses and plants. It presented an interesting appearance.

Taking all the exhibits of fruits together it is a very creditable display, one that the Americas need not blush to own.

In this fact man has become a co-creator, chiefest glory of our profession. As God made the apple He made it a bitter, stingy, wild crab, of an ugly, gnarled tree of the forest wastes. Through the patience and toil of many workers, through many seasons

past man at last has made the apple large, mellow and palatable. Man has improved upon the distant relative until, instead of a wild crabapple, he satisfies his desire for fruit with choice varieties too numerous to mention. God made the grape sour; by patience and skill man has developed it into manifold, delicious varieties.

From the green, thick-skinned, puckering, prickled plum, which God caused to grow in the primitive woods of China man has perfected the luscious peach.

So of the flowers; from the single wild rose has come the most beautiful double fragrant blossoms that pleases the taste of the most fastidious.

From a single Mexican bulb has been developed several hundred varieties of the gladiolus in every color and tint; also the same of the dahlia and many other varieties of flowers. By patience, skill and toil man has become co-creator with the Supreme Being—helping God to add the beauty to the blossom and the richness to the fruit. Women were the first agriculturists, protecting a few choice weeds for tomorrow's dinner. They, too, were probably the first to gather the flowers about their abodes and to guard and cultivate the fruits for a time of need. Gradually the fruit supplies have been modified and improved, until in this century, most wonderful for its reach of invention, improvement and noble unfolding, the labors of men and women as florist and pomologist compare most favorably with efforts of men in every other sphere.

Had it been practicable to have placed beside the choicest of our exhibits specimens of our ancient flora, from which our cultivated flowers have descended, or little pyramids of primitive types of our fruits, the average visitor would more readily have understood the significance of the various exhibits.

The floral garden of the exposition is just inside the Elmwood gates. The 40 acres lying between the gate on the west, the triumphal causeway on the east, the grand canal on the north and the crest of the slope of North bay on the south, are given over almost in their entirety to flowers. Paths wind in and out among the beds of bloom. There are hundreds of beds and millions of full-blown flowers. The display considered in connec-

tion with the entire flower exhibit at the exposition, created by Rudolph Ulrich and William Scott, makes a new era in floriculture.

Past expositions have had fine floral displays, but never has there been such a lavish, elaborate, complete demonstration of the achievements of floriculture as the visitors to the Rainbow City have enjoyed. The colors of the buildings, gorgeous though they be, pale in comparison with the splendor of the flower hues. Superb as the statuary unquestionably is, it shows no rarer grace and beauty than may be found in the flowers. Take a stroll through the floral gardens. Entering the Elmwood gate one comes face to bloom with a huge bed of cannas, Pierson's Premier, bordered with Abutilon Savitigii.

Nearly around the statue of the chariot race are green bay trees and pink and purple hydrangeas. South of the Chariot Race are evergreens and the tall red Robert Christie canna. Between Chariot Race and Woman's building is a glorious group of cannas, the red Michell Fainchon, the yellow Florence Vaughan, the Philip Rivorii and the L. Patry. Moore's evergreens cluster about the north corner of the Woman's Building, and directly across the path is an Abyssinian banana tree in full growing. To the left is a superb bed of cannas—Dreer's red and yellow Crozys, Berat, President McKinley and others. To the left of the gate, along the path to the midway, blooms a bed of geraniums and perennial phlox. Bobbink and Atkins show a large plot of green bay trees, evergreens and pines.

Zimmerman shows a pretty ornamental bed of red and yellow cannas, white geraniums and other flowers. By the west fence Dreer has a large plot of perennials, and across the path shows evergreen lawn grass smooth and as green as the emerald isles. Next to the east is a display such as the grandmothers love; it is of perennials and includes many of the old time favorites. There are hollyhocks, crimson eye, anemone, japonies, blue Japanese bell flower, purple cone flowers, rudbeckia and many others while hardy grasses of many varieties grow in a bed near by. East of that lies the Mexican display of cacti; they are picturesque, and it cost Mexico a large sum to create them. Central America is entitled to great praise for the valuable addi-

tion to the outdoor beauty of the exposition. Some varieties are six feet tall, while others are an inch high. Many are in bloom, and they present a gorgeous appearance.

Between the Mexican cacti and the Woman's Building looms a great bed of Pierson's cannas—Florence Vaughan in speckled yellow and red, that are a feature of the out-door display. Dreer has two beautiful beds of tuberous rooted begonias and a mammoth bed of verbenas of all colors, including the black shades. Near it is a large, bright red bed of geraniums shown by Cottage Gardens. Dreer vies with it in a bed of assorted geraniums, including the Miss Frances Perkins, the red athlete, the pink Mrs. E. E. Will, the white La Favorite and the red S. A. Mott. Across the path, in the waters of the grand canal, Dreer has shown white, pink and yellow water lilies, blooming with other aquatic plants in profusion. This aquatic display continues along the grand canal in this part of the grounds. Near by are the giant purple cone flower, a bed of Michell's dahlias, soon to bloom, a large bed of cannas, by Dreer, a bed of Vernon begonias and a bed of the ever-blooming new Admiral Schley roses. Around the northeast side of the Woman's building Pierson has evergreens, rhododendrons, and south the Queen's Garden has a bed of black beauty and deep red President McKinley cannas, while Conrad has a bed of American pedigree cannas.

East of the Woman's building the vista of flowers is so vast that one is nearly bewildered at the sea of bloom. Through the center of the expanse of bloom runs a broad path; south of the path is a bed of white roses, a bed of Vulcan hybrid carnations, a Dreer bed of begonias, a Pierson's bed of phlox, a Vaughn bed of verbenas and Francois Reif cannas, beds of Victoria cannas and Vaughn's International pansies and Gem Jacquemini-roses near by. Elwanger & Berry displayed a large bed of roses, Pierson of phlox, Meehan, vines and geraniums; Vaughn, Indian cannas and red phlox; Dreer, scarlet, white and purple asters; Pierson, orange king dahlias; Dreer, white hydrangeas; Vaughn, St. Louis salvia and superb white roses and three beds of geraniums and roses in profusion. Across the path and toward the Woman's building was displayed Rocky Mountain columbine from Denver; then comes Burpee's sunset colons, and

I will say these colons eclipsed anything in that line I ever saw. Dreer's double petunas were fine beyond description. There are beds and beds of cannas, geraniums, pansies, dicenthus, dahlias, phlox, snapdragons and perennials in such profusion it is impossible to describe them.

The rose season was over, but still there were hundreds of blossoms,—the famed Dorothy Perkins, Ulrich Bruner roses, Paul Neyron, Crimson Rambler, ever-blooming Burbank, Bogues roses and many other varieties; it is impossible to do them justice in description. South of the Woman's Building are two century plants nearly ready to bloom; the blossom stalks were about 25 feet high, with no leaves or branches until near the top, when branches grow out and blossom buds form; it has the appearance of a very much over-grown asparagus shoot.

In a goodly number of the flower beds, earlier in the season, there bloomed tulips, hyacinths, and other spring flowering bulbs, from three hundred to two thousand in one bed. Just think of it, two thousand tulips in bloom in one bed. What a gorgeous display it must have been!

The foregoing brief mention of the beauties in the beds give us something of an idea of the treat that has been enjoyed and still is in store for the visitors at the Pan-American.

Indoors the cut flower show in the north conservatory is a special treat. Gladiolas and sweet peas were the principal display, which was beautiful beyond description. The gladiolas were nearly all seedlings and hybrids; there were thousands of them and scarcely two alike. I will leave you to imagine their beauty and I hope my feeble description will aid your imagination.

HORTICULTURE AND FLORICULTURE FOR BOYS
AND GIRLS.

Mrs. Jos. Treleven.

Mr. President, Ladies and Gentlemen:—Webster defines horticulture as the art of cultivating gardens. He also says a garden is an enclosed place or piece of ground to plant and till, for the purpose of producing plants, shrubs, flowers and fruits. Land appropriated to the raising of culinary herbs and roots for domestic use is called a kitchen garden, that appropriated to flowers and shrubs a flower garden, and that to fruits a fruit garden. One of our greatest American poets, William Cullen Bryant, has said, "To him who in the love of nature holds communion with her visible forms, she speaks a various language." This sublime truth is manifested in the smallest detail of nature's great workshop, as well as in the grandest consummation of her most wonderful designs, from the fragrant breath of the exquisitely painted rose which blooms in my lady's bower, the delicious laden fruit trees, the rose plumaged birds flitting from bower to bower, to the majestic oak standing as a type of strength and endurance. Truly the mysteries of nature are great, and what can be more interesting or suggestive of deep thoughts than being brought in contact with those things in nature which make life pure, wholesome and glad. Why not then let our boys and girls begin their lives in this work, when there are so many object lessons before them that are not presented from our text books. The tendency of primary education has been to lead our country youth away from the farm instead of helping them in the study of those sciences relating to production.

How much we do in this world of ours because love prompts us, and so in the work of horticulture and floriculture for our boys and girls. We must first create in their young minds a love for it. Love of flowers is characteristic of the very highest type of men and women.

It is the love of nature which speaks to us in the various lan-

guages, and this love must be instilled in the hearts of our little ones. How interested will the young minds become, watching the different flower forms, learning how the seeds germinate, how the leaves unfold, till it is filled with wonder and awe, and wishes to know more of the process of nature, and it will not stop with plant life, but reach out into other realms, and step by step be gently led to at last look up in reverence, from nature, to "nature's God."

Love for the work will increase as the boys and girls are trained to delight in planting and caring for trees, shrubs, and flowers, and the knowledge and aspirations gained will make their homes more cheerful and they will go out into the world freighted with higher ideals and aspirations. After many years are passed and other things are forgotten, the early love for the fruit and flowers and the old time relish of outdoor life remains. We should not be contented to give children knowledge solely, but our main duty is to aid in building character which will give our boys and girls an impulse that will lead them to become good men and women. Encourage your boys and girls to make home beautiful and to brighten and hallow it in door and out with flowers which are God's messengers of love, and we will have better men and better women. Then, too, this work is healthful, pleasant employment, and will establish habits of industry and thrift. Three-quarters of our best and greatest men come from rural homes. Our best working pupils today in our high schools come from the country. Why? Because on the farm are lessons of industry. As a work most easily attainable, most congenial to the boys' nature and most productive of results in the way of habits of industry and honesty, horticulture stands first. The boy who is given a patch of ground to plant and care for and who is assisted to stick to it until results are realized is sure to get as valuable lessons in discipline as he would in several terms of school. The boys and girls must learn by doing, and the garden is one of the best spots to bring all their faculties into harmonious action to accomplish definite results. Here they may comprehend and expand by doing.

The presence of flowers, trees and shrubs does much to help

refine the tastes and develop love of the beautiful and build up lovable characters. The influence upon the children will abide and work through life. A home with flowers on the lawn, plants in the windows and a succession of small fruits from a garden planned, planted and well cared for, with each child given a special interest and work in it will do more to make children love the old homestead and keep the boys on the farm than anything else. Children are happier and better when surrounded with flowers and other beautiful things, and they not only add beauty to the home, but bring contentment to the mind. This work will produce thinking boys and girls. Farming is fast becoming a learned profession. Gardening in the widest sense of the word includes a hundred or more pursuits that call for the thoughtful brain, the inventive wit and skill. There is no employment which demands a closer observation, nor so fine a sense of climatic changes nor more infinite knowledge of the life, growth and habits of fruits, flowers and vegetables. It has been said by an old writer on this subject, that he who could plant a fruit tree and supply it with nourishment and protection through the years that intervene between its root existence and its full harvest of fruitage is master of a realm of causes, of effects, of influence, of tendency, whose domains are as large as the fruit bearing zone of the world, and he who can take a piece of sterile land, impoverished and worn out, and plant it into a garden, and by industry and intelligent manipulating of the soil, make it productive and to blossom like a rose, has won a victory over adverse circumstances prouder than the triumphs of the sword. Who does not like the beautiful fruit and flowers? What can be more interesting than to investigate the habits and growth of fruits and flowers, and to help unfold the riches of the vegetable kingdom, and to watch their growth and development? In nature there is nothing like it. Flowers are more interesting than gems, as they have the charm of living growth and change. The beauty of the bud is one picture, while the expanded blossom on the following day is quite another picture. If our boys and girls are brought up, surrounded with plants and flowers, and taught some of the mystery concerning them, and given the opportunity to care

for them, we would have less of crime and more of happy homes. How much of beauty has the garden given to literature and art; what wonderful discoveries to science and philosophy. Was it not the falling apple which taught Newton the wonderful law which guides the spheres in their appointed orbits?

Viola Tricolor, the "heart's ease" from which all our fine pansies have sprung, was first developed by a young girl in her teens. If you wish to develop your children into the broadest breast of manhood and womanhood let them get their earliest training from a garden and not from books. Let them bury in its soil before they have formed the habits of idleness and carelessness. Let them cultivate their patience, perseverance and watchfulness and they will take to their books quickened perceptive faculties, which will be worth to them more than genius. The boys and girls of today will make our men and women of tomorrow. Shall we have men and women who delight in and love horticulture? Then we must wed their hearts and intellects to the matchless attractions of this work and rural life so that their whole soul will prefer and choose that life.

It is too true that our schools have done little to interest the boys and girls of the rural districts in the study of the beautiful and wonderful things which nature has scattered so lavishly about them. Our schools and our school teachers have been nearly all looking one way, and that way has been away from the farm. The farmer does not receive his share of educational advantages. The common under-estimation of agriculture, the common aversion or distaste for agricultural pursuits, and the general trend of people and institutions away from the farm and farm life has long been deplored by rightly thinking and observing men.

If the children outgrow the district school and are sent away every influence tends to draw them away from the farm. This wrong attitude of our schools has tended very largely to draw young people from farm life to professional life, and as a result our professions are crowded. It is the fault of our time and generation to under-estimate the dignity, the beauty, the profit and the honor of farming and farm life.

The establishing of the agricultural schools and experiment stations in the different states is a step in advance. It has awakened an interest in agricultural education, and this should be increased by every means in our power. These colleges are doing a grand work in bringing the farm life from drudgery up to a scientific profession. This pursuit is of great importance, and we are getting past the age when any one can be a farmer. It takes brains to run a farm, and our boys and girls must be educated along that line if we expect them to follow that pursuit and become successful.

Some one has said that "agriculture is the science of sciences and art of arts," and when every other art and science shall have been thought and wrought out to its utmost limit, the science and practice of agriculture will still present boundless unexplored fields for work and research and reward wherein every faculty of mind and body with which man is endowed may find the fullest, the most satisfying, the most inspiring exercise and employment. Let the education of our boys and girls along horticultural lines go on and on, for herein lies our salvation.

Attention might be called to the work being done by the Minneapolis Woman's Improvement League in encouraging the growing of flowers among the boys and girls. The influence going out from this noble work can not be estimated. The one great object of the League is to create in our American people a more general interest in the culture of flowers, and this they hope to do by creating an interest and love for them in the hearts of the children. To see the children in their homes and to hear from the parents what the flowers are doing for them is all the argument one needs to become convinced as far as the children are concerned that the movement is successful.

LESLIE, MICH., AUGUST 22, 1901.

Early last spring we began the movement for the decoration of the yards of our school district. We held three meetings, at which informal lectures or talks were given by myself, expert gardeners and others, illustrated by some stereopticon views which I had made for the purpose. Two hundred to 300 parents attended these meetings. At one I distributed 150 pound packages of lawn grass seeds.

Through the children, to whom I gave lessons in flower growing, I distributed about 1,000 packets of morning glory seed, 500 wild cucumber, 500 sweet pea, 250 hyacinth bean, 500 nasturtium, beside the seeds which the children themselves brought for exchange.

In shrubs I gave out through the children 200 lilac bushes, 100 snow-ball, 100 Boston ivy, 100 common ivy, 25 barberry.

We then offered prizes for the results, \$5.00 for first prize, \$3.00 for second and \$2.00 for third for each of four classes, viz.: First, best front yard, second, best back yard; third, best window box; fourth, best flower bed. I shall judge these September 1, and perhaps have a meeting at which the prizes will be given.

While not all the children had success or gained more than a transient interest in the subject, many homes have been made beautiful with flowers, shrubs and vines. The unsightly brick walls are covered with green life and the clay soil and weeds transformed into little gardens.

I employed a man to draw 150 half loads of fertilizer to that number of homes with which to make the hard clay somewhat fertile. The degree of interest may be indicated by the fact that on Sacramento avenue in one block every yard was dug up and planted and nearly all the yards in neighboring blocks. You remember how close and crowded the little story brick cottages are. It is delightful to see some of the yards really decorative. I hope to see the good become contagious and much moral good result from pleasant homes and the work of caring for the garden.

Yours truly,

HENRY S. TIBBITS.

Shall we not then encourage our boys and girls to begin early in the work of horticulture and floriculture? When they raise fruits and flowers they are learning to love nature, and there is a joy in loving. It is a safe, pure pleasure that is derived from the cultivation of flowers and production of fruit. Nature herself set the example, and there is no pursuit which unfolds more beautiful possibilities for the growing generation.

Mr. Toole—I do not understand that we are likely to have anything in the way of a business gathering of this Society tomorrow, so I want to offer a resolution and also ask for the passing of another resolution. I will offer this resolution:

Resolved, That the hearty thanks of this Society are tendered to Jonathan Perriam of Chicago for the very generous exhibit of flowers which he has made before this Society.

Carried.

The following resolutions were adopted:

Resolved, That we fully appreciate and heartily commend the prompt action of President Loope and A. A. Parsons in securing space and opening the Wisconsin show of fruit at the Pan-American exposition.

Resolved, That the Wisconsin State Horticultural Society, to promote interest in horticulture amongst young men and women, offer to the student attaining the highest standing in horticulture in the University of Wisconsin short course a life membership in the Wisconsin State Horticultural Society, and to the nine students attaining the next nine highest standings an annual membership.

WHEREAS, It has been deemed advisable to continue the publication of the Wisconsin Horticulturist the coming season as the best means of disseminating horticultural information; and

WHEREAS, Mrs. Franklin Johnson, the present editor and manager, who has served our Society in this capacity faithfully and well and has succeeded admirably in giving us a magazine which has not only been a credit to the Society but to the state as well; and

WHEREAS, Mrs. Johnson has signified a desire to discontinue the work as editor and manager,

Resolved, By the executive board of this Society, That our present secretary be elected editor and manager of the Wisconsin Horticulturist the coming year at a salary of \$250.

Resolved, That a vote of thanks be given Mr. and Mrs. Marshall for the pleasant excursion and entertainment furnished during the closing hours of the convention.

Resolved, That the Forty Thousand Club be thanked for its contribution of music to the evening program of our meeting.

Resolved, That the Society extend thanks to the management of the University for courtesies shown and refreshments served.

Adjourned.

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